HCD-MD555

SERVICE MANUAL

US Model
AEP Model
UK Model
E Model
Tourist Model

Self Diagnosis Supported model

- This set is the Amplifier, CD player, MD Deck and Tuner section in DHC-MD555.

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CD Section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM53-K1BD33
	Optical Pick-up Type	KSM-213BFN/C2NP
MD Section	Model Name Using Similar Mechanism	NEW
	MD Mechanism Type	MDM-C1E
	Base Unit Type	MBU-C1E
	Optical Pick-up Type	KSM-260A/J1N

SPECIFICATIONS

Amplifier section

For the U.S. model

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
With 6 ohm loads, both channels driven, from 70 – 20,000 Hz; rated 25 watts per channel minimum RMS power, with no more than 0.9% total harmonic distortion from 250 milliwatts to rated output.

European model:
DIN power output (Rated)
30 + 30 watts (6 ohms at 1 kHz, DIN, 230 V)
Continuous RMS power output (Reference)
40 + 40 watts (6 ohms at 1 kHz, 10% THD)
Music power output (Reference)
60 + 60 watts

Other models:
DIN power output (Rated)
30 + 30 watts (6 ohms at 1 kHz, DIN, 120/240 V)
Continuous RMS power output (Reference)
40 + 40 watts (6 ohms at 1 kHz, 10% THD)
Peak music power output (Reference)
700 watts

Inputs
DVD/VIDEO IN (phono jacks) (switchable)
DVD IN: voltage 450 mV, impedance 47 kilohms
VIDEO IN: voltage 250 mV, impedance 47 kilohms
TAPE IN (phono jacks): voltage 250 mV, impedance 47 kilohms
MD WALKMAN LINK IN (stereo mini jack): voltage 125 mV, impedance 15 ohms

Outputs
TAPE OUT (phono jacks): voltage 250 mV, impedance 1 kilohm
PHONES (stereo mini jack): accepts headphones of 8 ohms or more.
SPEAKER: accepts impedance of 6 to 16 ohms.

CD player section

System	Compact disc and digital audio system
Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Laser output	Max. 44.6 μW* * This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.
Frequency response	2 Hz to 20 kHz

— Continued on next page —

MINI Hi-Fi COMPONENT SYSTEM

MICROFILM

SONY®

Specifications (continued)

MD deck section

System	MiniDisc digital audio system
Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Laser output	Max. 44.6 μW* * This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.
Recording time	74 minutes max. (using MDW-74)
Sampling frequency	44.1 kHz
Frequency response	5 Hz to 20 kHz

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range	87.5 – 108.0 MHz (50 kHz step)
Antenna	FM lead antenna
Antenna terminals	75 ohms unbalanced
Intermediate frequency	10.7 MHz

AM tuner section

Tuning range	
North American model:	
AM:	530 – 1,710 kHz (with the interval set at 10 kHz) 531 – 1,710 kHz (with the interval set at 9 kHz)
European model:	
MW:	531 – 1,602 kHz (with the interval set at 9 kHz)
LW:	153 – 279 kHz (with the interval set at 3 kHz)
Other models:	
MW:	531 – 1,602 kHz (with the interval set at 9 kHz) 530 – 1,710 kHz (with the interval set at 10 kHz)
SW:	5.95 – 17.90 MHz
Antenna	AM loop antenna
Antenna terminals	External antenna
Intermediate frequency	450 kHz

General

Power requirements	
North American model:	120 V AC, 60 Hz
European model:	220 – 230 V AC, 50/60 Hz
Other models:	110 – 120 V or 220 – 240 V AC, 50/60 Hz (adjustable with the voltage selector)
Power consumption	90 watts during normal operation 3 watts* or less in standby mode (clock displayed) Approximately 1 watt* in standby mode (clock not displayed) * Value measured at 110 or 220 V (except for North American and European models).
Dimensions (w/h/d) incl. projecting parts and controls	Approx. 215 x 320 x 410 mm ($8\ ^1/_2$ x $12\ ^5/_8$ x $16\ ^1/_4$ in.)
Mass	Approx. 9.5 kg (20 lbs 15 oz.)

Design and specifications are subject to change without notice.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

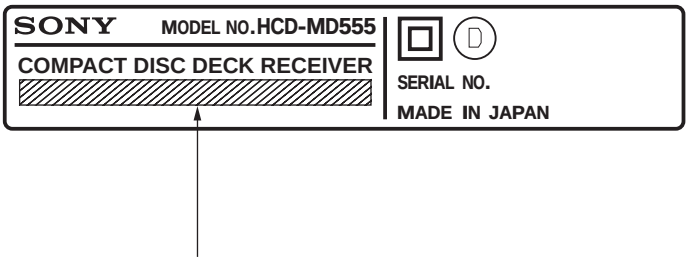
This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

The following caution label is located inside the unit.

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.
VORSICHT : UNSICHTBARE LASERSTRAHLUNG. WENN ABDECKUNG GEÖFFNET UND SICHEREITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING : OSYNLING LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
ADVERSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VIGYAZAT! : A BURKOLAT NYITÁSAKOR LÁTHATATLAN LÉZERSUGÁRVESZÉLY! KERÜLJE A BESUGÁRZÁST!

MODEL IDENTIFICATION
– BACK PANEL –



AC: 230V ~ 50/60Hz 90W: AEP, UK model
AC: 110 – 120/220 – 240V ~ 50/60Hz 90W
: Singapore, Malaysia, Hong Kong, Tourist model
AC: 120V 60Hz 90W: US model

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage.
Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

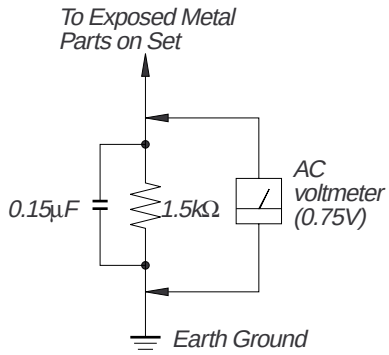


Fig. A. Using an AC voltmeter to check AC leakage.

TABLE OF CONTENTS

1. SELF-DIAGNOSIS FUNCTION ····· 5

2. SERVICE NOTE ····· 8

3. GENERAL ····· 12

4. DISASSEMBLY

4-1. Back Panel ····· 25
4-2. Mechanism (MDM-C1E) ····· 25
4-3. SP Board, Amp Board, Reg Board ····· 26
4-4. Front Panel ····· 26
4-5. Power Key Board, LED Board, Panel Board ····· 27
4-6. Power Transformer (T960), Trans-A/B/C/D Board ····· 27
4-7. CD Mechanism (CDM53-K1BD33) ····· 28
4-8. Escutcheon, Chassis (Top) ····· 29
4-9. Chassis (Elevator) New ····· 30
4-10. Motor (Head) Assy (M905), Head Relay Board ····· 30
4-11. MD Base Unit (MBU-C1E) ····· 31
4-12. BD Board ····· 31
4-13. Over Light Head (HR901) ····· 32
4-14. MD Optical Pick-up Block (KMS-260A/J1N) ····· 32
4-15. CD Optical Pick-up Block (KSS-213BA/F-NP) ····· 33
4-16. Fitting Base (Guide/Magnet) Assy ····· 33
4-17. Tray (Sub) ····· 34
4-18. Chassis (Mold B), Stocker, Slider (Selection) ····· 34
4-19. How to Assembly The Gears ····· 35
4-20. How to Attach The Slider (Selection) ····· 35
4-21. How to Attach The Stocker ····· 36
4-22. How to Attach The Chassis (Mold B) ····· 36

5. TEST MODE ····· 37

6. ELECTRICAL ADJUSTMENT ····· 43

7. DIAGRAMS

7-1. Block Diagrams ····· 53
• MD Section ····· 53
• CD Section ····· 55
• Audio Section ····· 57
• Power Section ····· 59
7-2. Circuit Boards Location ····· 61
7-3. Schematic Diagram — CD Section — ····· 63
7-4. Printed Wiring Board — CD Section — ····· 65
7-5. Schematic Diagram —Motor Section — ····· 67
7-6. Printed Wiring Board — Motor Section — ····· 69
7-7. Printed Wiring Board — MD Section — ····· 71
7-8. Schematic Diagram — MD Section (1/2) — ····· 73
7-9. Schematic Diagram — MD Section (2/2) — ····· 75
7-10. Schematic Diagram — Rds Section — ····· 77
7-11. Printed Wiring Board — Rds Section — ····· 78
7-12. Schematic Diagram — Relay Section — ····· 79
7-13. Printed Wiring Board — Relay Section — ····· 81
7-14. Printed Wiring Board — Main Section — ····· 83
7-15. Schematic Diagram — Main Section (1/3) — ····· 85
7-16. Schematic Diagram — Main Section (2/3) — ····· 87
7-17. Schematic Diagram — Main Section (3/3) — ····· 89
7-18. Schematic Diagram — Amp Section — ····· 91
7-19. Printed Wiring Board — Amp Section — ····· 93
7-20. Schematic Diagram — Panel Section — ····· 95
7-21. Printed Wiring Board — Panel Section ····· 97
7-22. Schematic Diagram — Power Section — ····· 99
7-23. Printed Wiring Board — Power Section — ····· 101
7-24. IC Block Diagrams ····· 105
7-25. IC Pin Function Description ····· 111

8. EXPLODED VIEWS

8-1. Main Block ····· 123
8-2. Back Panel Block ····· 124
8-3. MD Mechanism Deck-1 (MDM-C1E) ····· 125
8-4. MD Mechanism Deck-2 (MDM-C1E) ····· 126
8-5. MD Base Unit (MBU-C1E) ····· 127
8-6. CD Mechanism Deck-1 (CDM53-K1BD33) ····· 128
8-7. CD Mechanism Deck-2 (CDM53-K1BD33) ····· 129
8-8. Optical Block (BU-K1BD33) ····· 130

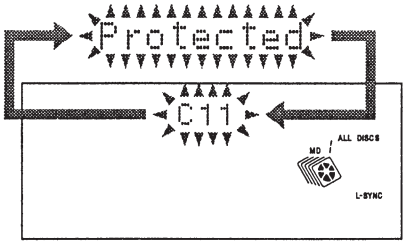
9. ELECTRICAL PARTS LIST ····· 131

SECTION 1
SELF-DIAGNOSIS FUNCTION

Self-diagnosis display function

(If a 3-digit code and a message appear alternately)

This system has a Self-diagnosis display function that alternately displays a 3-digit code and a message to inform you when it is not operating properly.
Check the display, then perform the measures in the table below to remedy the problem.
Should any problem persist even after two or three times, consult your nearest Sony dealer.



Code/Message	Cause and countermeasure
C11/Protected	The inserted disc is protected against erasure. ➔ Eject the disc, then slide the tab closed to cover the hole (see page 35).
C12/Cannot Copy	You are attempting to play a CD or MD with a format that the system does not support, such as a CD-ROM or MD data. ➔ Insert a CD or MD that is playable.
C13/REC Error	Recording could not be performed properly. ➔ Move the system to a place without vibration, then start recording over from the beginning (see the MD item "The sound skips." under "Troubleshooting" on pages 89 and 90).
	The disc is dirty (e.g., oil film, fingerprints) or scratched, or a non-standard disc is inserted in the deck. ➔ Replace the disc, then start recording over from the beginning.
C13/Read Error	The disc could not be read properly. ➔ Eject the disc, then insert it again.
C14/Toc Error	The disc could not be read properly. ➔ Insert a different disc. ➔ If the entire contents of the disc may be erased, use the All Erase Function to erase all the recorded contents (see page 54).
C41/Cannot Copy	The sound source is a copy of a commercially available music software. ➔ The Serial Copy Management System prevents you from making a digital copy (see page 84).

MD SECTION

OPERATING THE ERROR HISTORY MODE

Note: The self-diagnosis function is performed using the "error history display mode" in the test mode. The following procedure describes only the minimum required operating procedure to enter the error history mode. Therefore be careful not to enter any other modes by mistake. If you have entered any other modes by mistake, press the [MENU/NO] button and exit the mode.

1. Press [ENTER/YES], [NAME EDIT] and [MD3].
   (If the [Check] is not displayed, press the [MENU/NO] or [■] to let [Check] appear.)
2. Turn the [MULTI JOG] to display "[Service]", and press the [ENTER/YES] button.
3. Turn the [MULTI JOG] to display "ERR DP MODE" .
4. Press the [ENTER/YES] button to enter the error history mode and the message "total rec" appears.
5. Select the item to be displayed or to be executed using the [MULTI JOG].
6. When you want to display or execute the selected item, press the [MULTI JOG].
7. If you press the [MULTI JOG] again, the display returns to step 4.
8. You can exit the error history mode by pressing the [MENU/NO] button. The message "ERR DP MODE" is displayed.
9. You can exit the test mode by pressing the [REPEAT]. Then the HCD-MD555 enters the standby state, the disc is ejected, and the display exits the test mode.

DISPLAYING CONTENTS OF THE ERROR HISTORY

1. Select the desired item of history using the MULTI JOG dial.
2. Press the MD WALKMAN SYNC button to display the desired content of the selected error item.
3. Press the MD WALKMAN SYNC button again to return to the history item display screen.

Table 1 shows error history items and the contents.

Table 1

Display on screen	Contents of error history
total rec	Displays the recording time. The display appears in "r□□□□□□ h". This is the accumulated time laser in the power high operation. About 1/4 of the actual recording time. The time is shown in the range of 0h to 65535h in decimal number.
total play	Displays the playback time. The display appears in "p□□□□□□ h". This is the accumulated time of actual playback in which pause time is not counted. The time is shown in the range of 0h to 65535h in decimal number.
retry err	Displays the accumulated count of record retry error and playback retry error. The display appears in "r□□ p□□". "r" indicates the record retry error count, and "p" indicates the playback retry error count. The count is shown in the range of 00 to FF in hexadecimal number.
total err	Displays the total count of error. The display appears in "total□□". The count is shown in the range of 00 to FF in hexadecimal number.
err history	Displays the error contents from the latest error to the last ten errors. The display appears in "0□ E@@" (*2). The history number is shown in □. The smaller number means the newer history. (00 is the newest error.). The error code is indicated in @@. Refer to the following table for contents the error codes. Turn the MULTI JOG dial and you can change the error No.
er refresh (*3)	This is the mode with which you can clear the histories of "retry err", "total err", and "err history". Perform this operation to clear the past error history before returning the repaired product to the customer. To clear the error histories, press the MULTI JOG button. After "er refresh?" is displayed, press the ENTER/YES button. The error histories are cleared and the message "Complete!" appears for a moment. When this mode is executed, be sure to check the following. • Data must have been cleared. • Perform recording and playback, and check that the mechanism operates correctly.
tm refresh (*3)	This the mode with which you can clear the histories of "total rec" and "total play". These histories are used as the reference when replacing the optical pickup. Perform this operation to clear the histories when the optical pickup is replaced with the new one. To clear the error histories, press the MULTI JOG button. After "tm refresh?" is displayed, press the ENTER/YES button. The error histories are cleared and the message "Complete!" appears for a moment. When this mode is executed, be sure to check the following. • Data must have been cleared. • Perform recording and playback, and check that the mechanism operates correctly.

(*2) Contents of each error display are shown in Table 2.

(*3) All of error contents are cleared by performing "er refresh" and "tm refresh".
Perform this operation and clear the error history only when optical block is replaced for maint enance work. Never perform this operation in other cases.

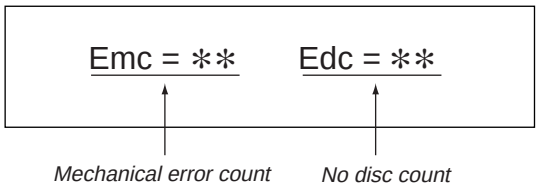
Table 2

Display	Error contents
0□ E00	No errors
0□ E01	Disc error Cannot read PTOC
0□ E02	Disc error UTOC error
0□ E03	Loading error
0□ E04	Cannot read the address
0□ E05	Out of FOK
0□ E06	Focus does not lock
0□ E07	Retry of recording
0□ E08	Record retry error
0□ E09	Retry of playback
0□ E0A	Playback retry error

CD SECTION

OPERATING THE DISPLAYED HISTORIES

When the three buttons of ENTER/YES , PRESET EQ , and CD3 are pressed simultaneously, and the mechanical error count and the count of "NO DISC" that optical system has judged, are displayed.

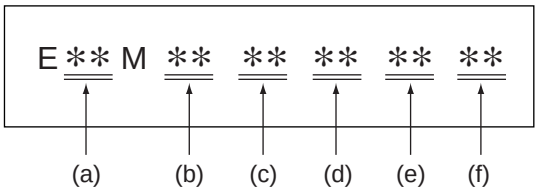


When the buttons that are shown in Table 2 are pressed in this state, the following operations are executed as listed below.

Table 2

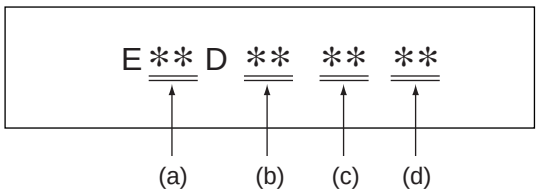
Button	Function
CD1	Mechanical error code from the latest error to the last ten errors are displayed each time this button is pressed. (Note 1)
CD2	The reasons why "NO DISC" the optical system has judged to be an error, are displayed from the latest error to the last ten errors are displayed each time this button is pressed. (Note 2)
CD1 ⏏	Resets the mechanical error count.
CD2 ⏏	Resets the "NO DISC" count.

(Note 1) Mechanical error code



(a) Mechanical error count
The latest error "00" to the last ten error "09"
(b) "FF" : Mechanical error after mechanism is initialized.
(c) "1∗" } : Mechanical error during loading the tray in between
"2∗" } the stocker position and the deeper end.
(d) "Don't care"
(e) "2∗" : Mechanism error while the stocker is moving up/down.
(f) "2∗" : Mechanism error of the clumper and that during mode switching

(Note 2) NO DISC code in the order of occurrence



(a) The number of NO DISC
The latest one "00" to the last ten "09"
(b) "01" : Focus error
"02" : GFS error
"03" : Setup error
(c) "00" : Judged as NO DISC without chucking retry
"02" : Judged as NO DISC after chucking retry is performed
(d) The status, when NO DISC judgment is made
"1∗" : Stop
"2∗" : Set up
"3∗" : TOC read
"4∗" : Access
"5∗" : Play
"6∗" : Pause
"7∗" : Manual search (play)
"8∗" : Manual search (pause)

SECTION 2
SERVICE NOTE

CD-TEXT TEST DISC

This unit is able to display the test data (character information) written in the CD on its fluorescent indicator tube.
The CD-TEXT TEST DISC (TGCS-313:4-989-366-01) is used for checking the display.
To check, perform the following procedure.

Checking Method:

1. Turn ON the power, set the disc on a tray, and chuck the disc.
2. Press the [▷] button and play back the disc.
3. The following will be displayed on the fluorescent indicator tube.
   Display : 1kHz/0 dB/L&R
4. Rotate [MULTI JOG] dial or press [◀◀ AMS ▶▶] of a remote commander to switch the track. The text data of each track will be displayed.
   For details of the displayed contents for each track, refer to “Table 1, 2 : CD-TEXT TEST DISC Recorded Data Contents and Display”.

Restrictions in CD-TEXT Display

In this unit, some special characters will not be displayed properly. These will be displayed as a space or a character resembling it.

Table 1 : CD-TEXT TEST DISC Recorded Data Contents and Display (TRACKS No. 1 to 32:Normal Characters)

TRACK No.	Recorded contents	Display
1	1kHz/0dB/L&R	Same as the values shown in the left column.
2	20Hz/0dB/L&R	
3	40Hz/0dB/L&R	
4	100Hz/0dB/L&R	
5	200Hz/0dB/L&R	
6	500Hz/0dB/L&R	
7	1kHz/0dB/L&R	
8	5kHz/0dB/L&R	
9	7kHz/0dB/L&R	
10	10kHz/0dB/L&R	
11	16kHz/0dB/L&R	
12	18kHz/0dB/L&R	
13	20kHz/0dB/L&R	
14	1kHz/0dB/L&R	
15	1kHz/-1dB/L&R	
16	1kHz/-3dB/L&R	
17	1kHz/-6dB/L&R	
18	1kHz/-10dB/L&R	
19	1kHz/-20dB/L&R	
20	1kHz/-60dB/L&R	
21	1kHz/-80dB/L&R	
22	1kHz/-90dB/L&R	
23	No-signal emphasis: ON//L&R	Infinity␣Zero␣w/o␣emphasis // L&R
24	No-signal emphasis: OFF//L&R	Infinity␣Zero␣with␣emphasis // L&R
25	400Hz+7kHz(4:1)/0dB/L&R	Same as the values shown in the left column.
26	400Hz+7kHz(4:1)/-10dB/L&R	
27	19kHz+20kHz(1:1)/0dB/L&R	
28	19kHz+20kHz(1:1)/-10dB/L&R	
29	100Hz/0dB/L*	
30	1kHz/0dB/L*	
31	10kHz/0dB/L*	
32	20kHz/0dB/L*	

* Other channel is infinity zero.

Table 2: CD-TEXT TEST DISC Recorded Data Contents and Display (TRACKS NO. 33 to 99)
(In this unit, some special characters cannot be displayed. This is no a fault.)

TRACK	Recorded contents	Display
33	100Hz/0dB/R*	Same as the values shown in the left column.
34	1kHz/0dB/R*	
35	10kHz/0dB/R*	
36	20kHz/0dB/R*	
37	100H square wave //L&R	100Hz␣Square␣Wave // L&R
38	1Hz square wave //L&R	1kHz␣Square␣Wave // L&R
39	1kHz emphasis ON/–0.37dB/L&R	1kHz␣w/emphasis /– 0.37dB/L&R
40	5kHz emphasis ON/–4.53dB/L&R	5kHz␣w/emphasis / – 4.53dB/L&R
41	16kHz emphasis ON/–9.04dB/L&R	16kHz␣w/emphasis / – 9.04dB/L&R
42	! " # $ % & ' (21h to 27h) 1kHz 0dB L&R	Same as the values shown in the left column.
43	( ) * + , – . / (28h to 2Fh)	
44	0 1 2 3 4 5 6 7 (30h to 37h)	
45	8 9 : ; < = > ? (38h to 3Fh)	
46	@A B C D E F G (40h to 47h)	
47	H I J K L M N O (48h to 4Fh)	
48	P Q R S T U V W (50h to 57h)	
49	X Y Z [¥] ^ _ (58h to 5Fh)	X Y Z [\ ] ^ _ (58h to 5Fh)
50	‘ a b c d e f g (60h to 67h)	Same as the values shown in the left column.
51	h i j k l m n o (68h to 6Fh)	
52	p q r s t u v w (70h to 77h)	
53	x y z { l } ~ ▌ (78h to 7Fh)	
54	▯ ¡ ¢ £ ¤ ¥ ¦ § (A0h to A7h) 8859-1	(A0h to A7h) 8859-1
55	♪ © ª » ¬ ® ® – (A8h to AFh)	(A8h to AFh)
56	• ± ² ³ ‘ µ ¶ • (B0h to B7h)	(B0h to B7h)
57	† ¹ º « ¼ ½ ¾ ¿ (B8h to BFh)	(B8h to BFh)
58	À Á Â Ã Ä Å Æ Ç (C0h to C7h)	A A A A A A␣C␣ (C0h to C7h)
59	È É Ê Ë Ì Í Î Ï (C8h to CFh)	E E E E I I I I␣(C8h to CFh)
60	D Ñ Ò Ó Ô Õ Ö × (D0h to D7h)	D N O O O O O␣(D0h to D7h)
61	Ø Ù Ú Û Ü Y Þ ß (D8h to DFh)	0 U U U U Y␣␣␣ (D8h to DFh)
62	à á â ã ä å æ ç (E0h to E7h)	a a a a a a␣c␣(E0h to E7h)
63	è é ê ë ì í î ï (E8h to EFh)	e e e e i i i i␣(E8h to EFh)
64	ð ñ ò ó ô õ ö ÷ (F0h to F7h)	d n o o o o o␣(F0h to F7h)
65	ø ù ú û ü y þ ÿ (F8h to FFh)	o u u u u y␣y␣(F8h to FFh)
66	No.66	Same as the values shown in the left column.
67	No.67	
to	to	
99	No. 99	

* Other channel is infinity zero.

IOP DATA RECORDING AND DISPLAY WHEN THE OPTICAL PICKUP AND NON-VOLATILE MEMORY (BD (MD) BOARD IC171) IS REPLACED

The IOP value that is indicated on the optical pickup unit can be saved in the non-volatile memory. By saving the IOP value saved in the non-volatile memory, it is no more necessary to read the IOP value on the optical pickup unit. It is recommended to save the IOP value saved in the non-volatile memory when the optical pickup unit and/or non-volatile memory (BD (MD) board IC171) is replace as the followings.

How to save the IOP value in the non-volatile memory:

1. Turn on the power and select the MD function. Press the three buttons simultaneously, i.e., the [ENTER/YES], [NAME EDIT], and [MD3] buttons to activate the test mode.
2. Turn the [MULTI JOG] dial to show the message "[service]" on display. Press the [ENTER/YES] button.
3. Turn the [MULTI JOG] dial to show "Iop Write" (28) on display. Press the [ENTER/YES] button.
4. "REF=@@@.@" (@ is an arbitrary number) appears, and the number that can be changed as described in the next step, flashes.
5. Input the IOP value that is indicated on the optical pickup, as follows.
   Selection of numeral : Select a number by turning the [MULTI JOG] dial.
   Selection of digit : Select the desired digit by pressing the [MD WALKMAN SYNC] button.
6. Press the [ENTER/YES] button and the message "Measu=@@@.@" appears. (@ is an arbitrary number.)
7. Press the [ENTER/YES] button without changing the number because the result data of adjustment is saved as the value of step 6.
8. The message "Complete!!" appears for a moment. This value is saved in the non-volatile memory, and the message "Iop Write" is displayed.
9. After saving is complete, press the [REPEAT] button to return to the normal operating mode.

How to display the IOP value saved in the non-volatile memory:

1. Turn on the power and select the MD function. Press the three buttons simultaneously, i.e., the [ENTER/YES], [NAME EDIT], and [MD3] buttons to activate the test mode.
2. Turn the [MULTI JOG] dial to show "[Service]" on display. Press the [ENTER/YES] button.
3. Turn the [MULTI JOG] to show "Iop Read" (C27) on display.
4. "@@.@/##.#" appears, and the saved contents are displayed.
   @@.@ : The Iop value that is indicated on the pickup
   ##.# : The Iop value after adjustment is complete
5. To exit this mode, press the [MENU/NO] button to show "Iop Read" on display. Press then the [REPEAT] button to return to the normal operating mode.

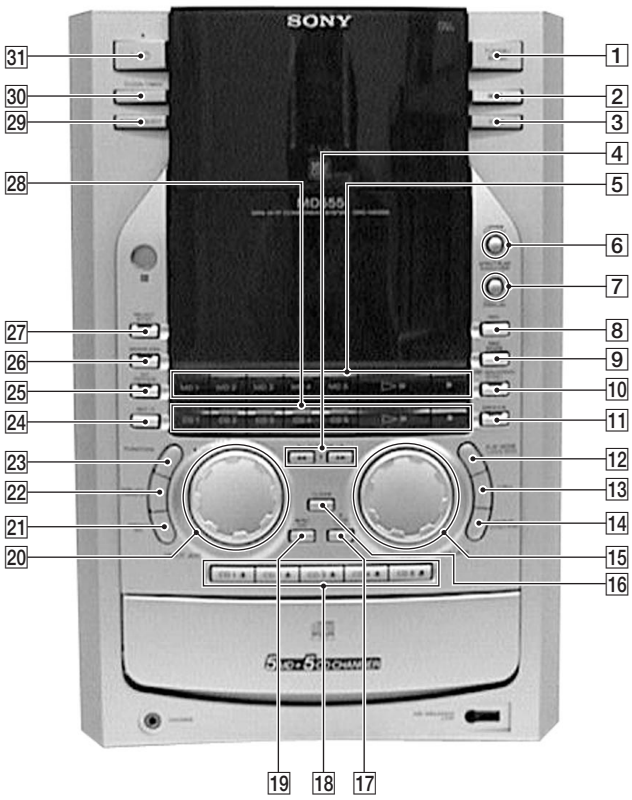
CHECK BEFORE STARTING PARTS REPLACEMENT AND ADJUSTMENT

Cause of defect can be approximately located by performing the following checks before starting repair work. For the detailed procedure, refer to "SECTION 6 ELECTRICAL ADJUSTMENTS".

	Criterion of judgement (If the value does not satisfy the following specification value, it is judged as defective.)	Countermeasure when result of judgement is defective
Laser power check (page 44)	• 0.9 mW power Specification value: 0.84 to 0.92 mW • 7.0 mW power Specification value: 6.8 to 7.2 mW	• Cleaning the optical pickup • Re-adjustment • Replacement of the optical pickup
	• Iop (when 7 mW) The Iop value that is indicated on the optical pickup unit ±10 mA	• Replacement of the optical pickup
Traverse check (page 45)	• Traverse waveform Specification value: Offset 10 % or less	• Replacement of the optical pickup
Focus bias check (page 46)	• Error rate check Specification value: At all points of a, b, c C1 error 220 or less AD error 2 or less	• Replacement of the optical pickup
CPLAY check (page 46)	• Error rate check Specification value: a. When the test disc (MDW-74/AU-1) is used C1 error 80 or less AD error 2 or less b. When the check disc (TDYS-1) is used C1 error 50 or less	• Replacement of the optical pickup
Self-record/playback check (REC/PLAY) (page 46)	• Error rate check with CPLAY Specification value: C1 error 80 or less AD error 2 or less	When test result is all the time defective: • Replacement of the over-write head • Check that circuits in the peripheral of the over-write head are not open
TEMP check (temperature compensation offset adjustment) (page 44)	• NG when "T=@@(##)[NG" is displayed (@@ and ## are arbitrary numbers.)	When test result is defective from time to time: • Check if the over-write head is not deformed • Mechanical check on parts around the sledding mechanism
		• Check that circuits in the peripheral of D101 (BD board) are not open • Check signals in the peripheral of IC101, 121, CN102, 103 (BD board)

Note: The criterion of judgement is presented only for the purpose of judgment whether specifications are satisfied or not. This is not the specification values of adjustments.
When any adjustments are attempted, use the specification values that are described in the respective adjustment procedures.

SECTION 3
GENERAL



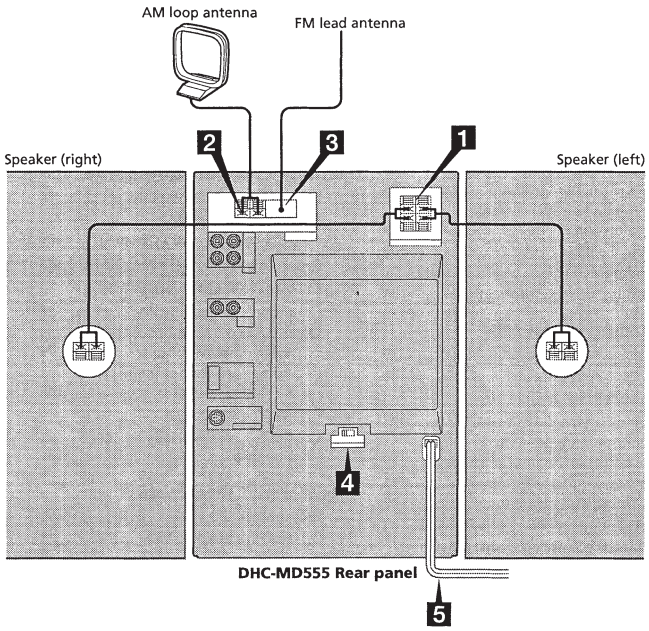
1 TUNER/BAND button
2 DBFB button
3 MD⏏ button
4 CURSOR ◀◀/▶▶ buttons
5 MD1 – MD5/▷II/■ buttons
6 SPECTRUM ANALYZER UPPER DISPLAY button
7 SPECTRUM ANALYZER LOWER DISPLAY button
8 REC button
9 REC MODE button
10 MD WALKMAN SYNC button
11 GROOVE button
12 PLAY MODE TUNNING MODE button
13 1/ALL button
14 REPEAT STEREO/MONO button
15 VOLUME dial
16 CLEAR button
17 ENTER/YES button
18 CD1 ⏏ – CD5 ⏏ buttons
19 MENU/NO button
20 MULTI JOG dial
21 PRESET EQ button
22 NAME EDIT/CHARACTER button
23 FUNCTION button
24 REC IT button
25 HIT PARADE button
26 SEAMLESS button
27 SELECT SYNC button
28 CD1 – CD5/▷II/■ buttons
29 TIMER SELECT button
30 SET button
31 I/⏻ (power) button

Step 1: Hooking up the system

Perform the following procedure 1 to 5 to hook up your system using the supplied cords and accessories.
The supplied antennas are for indoor use. We recommend connecting a commercially available antenna to ensure stable reception.
See pages 74 – 81 for connecting outdoor antennas and other optional equipment.

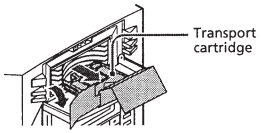
Preparation

Pull the transport cartridge straight toward you out of the MD deck.



Preparation

Pull the transport cartridge straight toward you out of the MD deck.



Tip

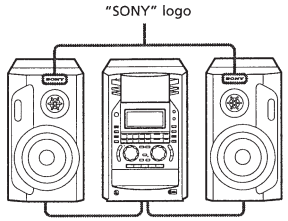
Keep the transport cartridge for future use.
When you move the system, insert the cartridge into the MD 4 slot of the MD deck in the same manner as when you purchased the system to prevent deck trouble (see page 82).

Note

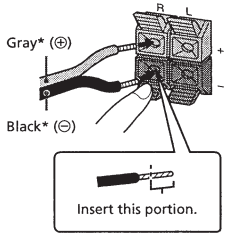
Be sure to remove the transport cartridge before you turn on the system.
If you turn on the system without taking out the cartridge, "MD RE-INSERT!" appears. Turn off the system, then take out the cartridge.

1 Connect the speakers.

Position the speakers so that the SONY logo is on the inside. Viewed from the front of the system, connect the speaker on the left side to the SPEAKER L terminals, and the speaker on the right side to the SPEAKER R terminals.



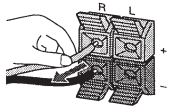
1 Connect the speaker cords to the SPEAKER terminals of the same color.



* The color of your speaker cords might be different. See the manual provided with your speaker system for details (except for the tourist model).

2 Pull gently on the speaker cord to make sure it is connected correctly.

If the speaker cord pulls out, connect it again.



Notes

- Keep the speaker cords away from the antennas to prevent noise during radio reception.
- If you reverse the right and left speaker connections or the speaker positions, the sound may be strange.

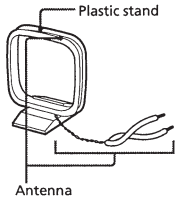
continued

This section is extracted from instruction manual.

Step 1: Hooking up the system (continued)

2 Connect the AM antenna.

Structure of the supplied AM antenna

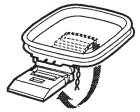


The antenna is the proper shape and length for receiving AM radio waves, so do not remove or roll up the antenna.

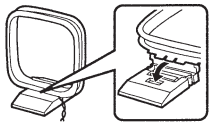
To set up the AM antenna

1 Remove only the twisted portion ( ) of the antenna from the plastic stand.

2 Set up the stand.
Open the stand,



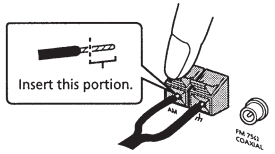
and fit the antenna into the groove.



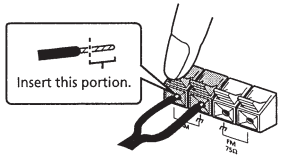
To connect the AM antenna

1 Insert the antenna cord into the AM antenna terminals.

Jack type Ⓐ



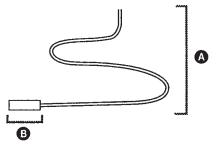
Jack type Ⓑ



2 Pull gently on the antenna cord to make sure it is connected correctly.
If the antenna cord pulls out, connect it again.

3 Connect the FM antenna.

Structure of the supplied FM lead antenna

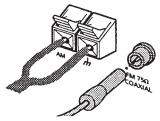


Ⓐ : The antenna cord receives signals along its entire length, so do not roll up the cord.
Ⓑ : Insert this portion into the antenna terminal.

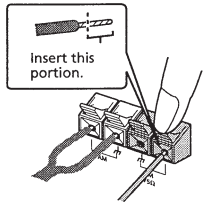
To connect the FM antenna

1 Insert the antenna cord into the FM antenna terminal.

Jack type Ⓐ



Jack type Ⓑ

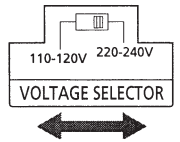


2 Pull gently on the antenna cord to make sure it is connected correctly.
If the antenna cord pulls out, connect it again.

To extend the FM antenna

Tune in an FM station and fasten the antenna to a position that provides good reception.

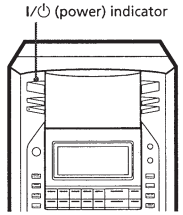
4 Adjust the operating voltage (for models with a voltage selector).
Before connecting the power cord, set VOLTAGE SELECTOR on the rear panel to the position of the local power line voltage.



5 After finishing all speaker and antenna connections, connect the power cord to a wall outlet.

Plug Adapter (except for North American and European models)
If the plug of this system does not fit your wall outlet, attach the supplied adapter on to the plug.

When you connect the power cord, only the I/⏻ (power) indicator lights red.

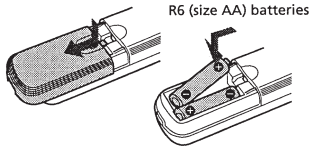


To display the clock at this time, see "Showing the time" on page 9.

continued

Step 1: Hooking up the system (continued)

Inserting two R6 (size AA) batteries into the remote



Always insert the batteries from the ⊖ end as shown in the illustration.

Tip

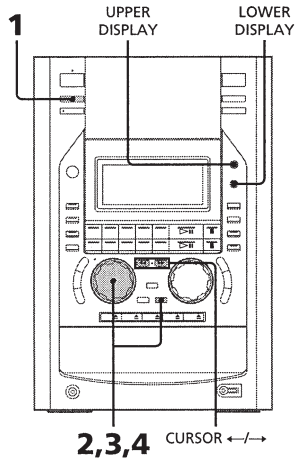
With normal use, the batteries should last for about six months. When the remote no longer operates the system, replace both batteries with new ones.

Note

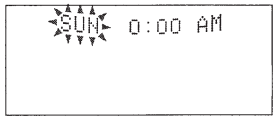
If you do not use the remote for a long period of time, remove the batteries to avoid possible damage from battery leakage.

Step 2: Setting the time

You can set the time while the system is off. You must set the time beforehand to use the timer-recording and other timer functions. The clock is on a 24-hour system for the European model, and a 12-hour system for other models.
The 12-hour system is used for illustration purposes.

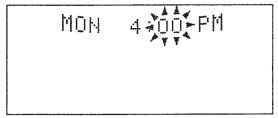


1 Press CLOCK/TIMER SET.
The time setting display appears, and the day indication "SUN" flashes.



2 Turn MULTI JOG and set the day, then press ENTER/YES.
The hour indication flashes.
(For models using a 12-hour system, noon is indicated as 0:00 PM, and midnight as 0:00 AM.)

3 Turn MULTI JOG and set the hour, then press ENTER/YES.
The minute indication flashes.



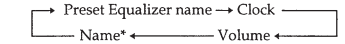
4 Turn MULTI JOG and set the minute, then press ENTER/YES.
The clock starts working, and the clock display disappears.

If you made a mistake

Press CURSOR ← or → until the indication you wish to change (day, hour, minute) flashes, then change the setting.

Showing the time

In order to conserve power, this system is set at the factory to not display the clock when the system is off (**Power Saving Mode**). To display the clock even when the system is off, press UPPER (or LOWER) DISPLAY while the system is off. Press the button again to turn the clock display off and activate the Power Saving Mode.
While the system is on, the information that appears at the top of the display changes as follows each time you press UPPER DISPLAY.



* Displayed only when disc title, track title, radio station name or other name information is labeled. No display when this information is not labeled.

Tip

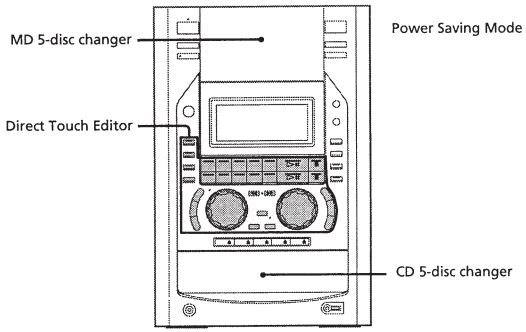
The upper dot of the clock display flashes for the first half of a minute (0 to 29 seconds), and the lower dot flashes for the last half of a minute (30 to 59 seconds).

Changing the preset time

You can also set and change the time while the system is on.

1 Press CLOCK/TIMER SET.
2 Turn MULTI JOG until "CLOCK SET ?" appears.
3 Press ENTER/YES.
4 Perform steps 2 to 4 of "Setting the time".

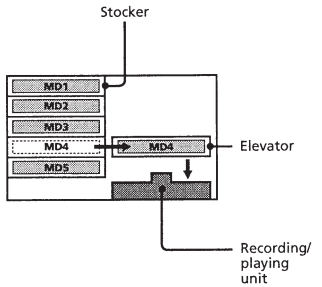
Features of the DHC-MD555



MD 5-disc changer with various recording functions

You can record continuously on up to 5 MDs. In addition, the centralized control panel lets you easily select the desired MD for either playing or recording.

MD changer system



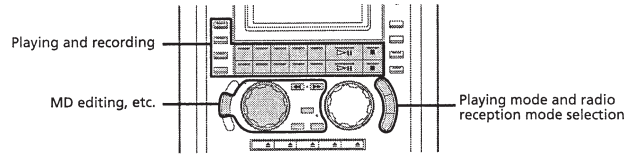
The MD changer consists of a recording/playing unit, a stocker which holds the discs and an elevator which transports the disc to be recorded or played from the stocker to the recording/playing unit. For example, if you press MD 4, the elevator moves to the MD 4 slot, extracts the disc from the slot and transports it to the recording/playing unit. If another disc is already loaded in the elevator, the elevator first returns that disc to its slot and then extracts the new disc. This operation is the same for recording.

Notes

- The MD changer has only one recording/playing unit, so you cannot play or record on multiple discs at the same time.
- Noise may come from the MD changer when changing discs or turning the system on and off. However, this is just noise produced by the operation of the internal mechanisms and does not indicate a malfunction.

Easy-to-use, direct touch editor

The recording, editing and other control buttons are featured in a centralized layout by type of operation, making operation simple and easy.



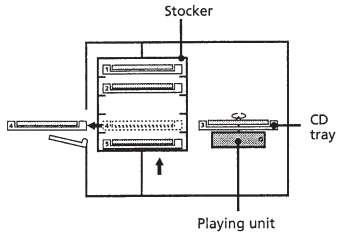
Power Saving Mode saves power when not using the system

The DHC-MD555 has a function which reduces the power consumed (e.g., used to receive remote signals or operate the clock) when the system is off.

CD 5-disc changer with EXCHANGE mechanism

You can change other discs while playing a CD (EXCHANGE mechanism). In addition, The centralized control panel lets you easily program and play the desired tracks from up to 5 CDs.

CD changer system



The CD changer consists of a playing unit, trays which hold the CDs, and a stocker which transports the CDs on their trays to the CD slot and the playing unit.
For example, if you press CD 3, the stocker moves until the CD 3 tray comes to the position of the playing unit and then moves the CD 3 tray over the playing unit. If you press CD 4 while playing CD 3, the stocker leaves the CD 3 tray over the playing unit, moves so that the CD 4 tray comes to the position of the CD cover, opens the CD cover and pushes out the CD 4 tray (EXCHANGE mechanism).

Note

Noise may come from the CD changer when changing discs or turning the system on and off. However, this is just noise produced by the operation of the internal mechanisms and does not indicate a malfunction.

Before you start recording

MDs (MiniDisc) let you digitally record and play back music with high quality sound. Another feature of MDs is track marking like that on CDs. The track marking feature lets you quickly locate a specific point or easily edit the recorded tracks.
Also, the way the signals and track numbers are recorded differs depending on the source.

When the source you want to record from is:

- **This system's CD player**

– The digital signal from the CD is recorded as it is (digital recording)*.
Track numbers are automatically marked as on the original CD.

- **This system's tuner or other optional components connected to the TAPE or DVD/VIDEO input jacks, etc. (e.g., a tape deck, DVD player or VCR)**

– The analog signal is converted to a digital signal and recorded (analog recording).
– A track number is marked at the beginning of a recording, but when you turn on the Level Synchro Recording function (see page 46), track numbers are automatically marked in sync with the level of the input signal.

* For details on limitations of digital recording, see page 83.

Note on the track numbers of an MD

On an MD, the track numbers (track sequence), track start and end point information, etc., are recorded in the TOC** area independent of the sound information. You can edit recorded tracks quickly by modifying the TOC information.

** TOC: Table Of Contents

After recording

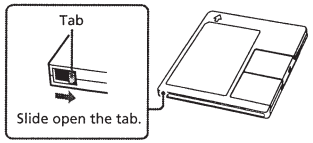
➡ Eject the MD, or press I/⏻ (power) and turn off the system.
The TOC is updated and recording is completed.

Before pulling out the power cord

MD recording is completed when the MD Table of Contents (TOC) is updated. The TOC is updated when you eject the MD or press I/⏻ (power) and turn off the system. Do not pull out the power cord before updating the TOC (while "TOC" is lit) or while updating the TOC (while "TOC" is flashing) to ensure the complete recording.

Protecting a recorded MD

- To record-protect an MD, slide open the tab at the side of the MD.
In this position, the MD cannot be recorded. To record on the MD, slide close the tab to cover the hole.



- If the MD is record-protected, "C11" and "Protected" appear alternately and the MD cannot be recorded.
To record on the MD, first eject the MD, then slide close the tab at the side of the MD to cover the hole.

List of compatible components

This section describes components that can be connected to the system; these components are listed below. Be sure to confirm the jacks and the FUNCTION. For details on the connections and operation, refer to the descriptions on the following pages. Also refer to the operating instructions provided with each component.

Component	Jack	FUNCTION
MD WALKMAN*	MD WALKMAN* LINK	MD WALKMAN
Tape deck	TAPE IN/OUT	TAPE
DVD player	DVD/VIDEO IN	DVD
TV	DVD/VIDEO IN	VIDEO
VCR	DVD/VIDEO IN	VIDEO

* "MD WALKMAN" is a trademark of Sony Corporation.

Connecting an MD WALKMAN

You can connect a Sony portable MiniDisc recorder/player "MD WALKMAN" to the system using the supplied MD WALKMAN LINK cable.
To use an MD WALKMAN, refer to the operating instructions for the MD WALKMAN.

Note

Never connect any components other than those listed below to the MD WALKMAN LINK jack. Doing so could result in malfunction.

- **Models that can be connected:**

  Portable MiniDisc recorder:

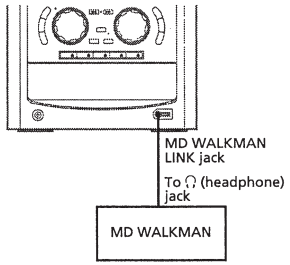
  MZ-R5ST* (Europe only), R50, R30

  Portable MiniDisc player:

  MZ-E45 (Hong Kong only), E44, E35, E30, E25, EP11

  * Be sure to remove the MD WALKMAN from the station and connect only the MD WALKMAN to the system.
- **Features:**

  The system starts recording automatically in sync with MD WALKMAN play (synchro recording). The sound from the MD WALKMAN is recorded as an analog signal to the MD deck. In addition, if you use a portable MiniDisc player, you can copy the track title of the current track and mark track numbers automatically.



1 If the power is on, press I/⏻ (power) to turn off this system.

2 Turn off the MD WALKMAN's Mega Bass function.
Set the DIGITAL MEGA BASS switch to "0", or press DIGITAL MEGA BASS so that "BASS" disappears from the display.

3 Turn on the MD WALKMAN's AVLS (volume limiting) function.
Set the AVLS switch to "LIMIT" or "ON".

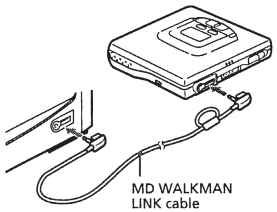
4 Play the MD WALKMAN.

5 Press DISPLAY on the MD WALKMAN repeatedly to display the playing time and track number on the remote. (This information appears on the main unit for the MZ-R30.)
The MD WALKMAN is designed so that the playing time and track number information is output from the remote jack.

continued

6 Use the remote for the MD WALKMAN to set the volume to the highest setting.

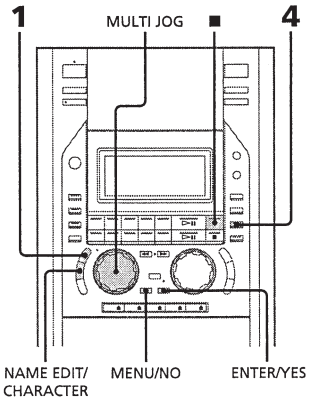
7 Disconnect the remote for the MD WALKMAN and connect the MD WALKMAN to the system.
Connect the end with the loop to the MD WALKMAN.



Notes

- **Do not place the MD WALKMAN on top of the system. The sound may drop out or noise may occur. Doing so could also result in malfunction.**
- If the Mega Bass function is on, or the AVLS function is off, the sound may be distorted during MD WALKMAN play.
- If you connect the MD WALKMAN to the system while the power is on, electronic noise may occur, resulting in misoperation. Always be sure to turn the system off before connecting the MD WALKMAN.
- When you connect an MD WALKMAN to the system, the MD WALKMAN consumes more power than during normal play. Make sure the battery level is sufficient before starting recording.

Recording from an MD WALKMAN



1 Press FUNCTION repeatedly until "MD WALKMAN" appears.

2 Set the MD WALKMAN to playing pause mode.
If your MD WALKMAN does not have a playing pause function, set the MD WALKMAN to stop mode.

3 Press I◄◄ or ►►I on the MD WALKMAN repeatedly to select the track to be recorded.

Note

You can select tracks only for models with the I◄◄ / ►►I button (except for models on which these buttons also function as the ► button).

4 Press MD WALKMAN SYNC.
The MD in the slot is automatically pulled in and the MD deck stands by for recording.

5 Press ► on the MD WALKMAN.

The MD WALKMAN starts playing and the system starts recording simultaneously to the MD.
When recording is complete, press ■ for the MD on the system first, then press ■ on the MD WALKMAN to stop recording.

To stop recording

Press ■ for the MD on the system first, then press ■ on the MD WALKMAN.
The sound from the speakers drops out momentarily and the recording stops.

Before pulling out the power cord

MD recording is completed when the MD Table of Contents (TOC) is updated. The TOC is updated when you eject the MD or press I/⏻ (power) and turn off the system. Do not pull out the power cord before updating the TOC (while "TOC" is lit) or while updating the TOC (while "TOC" is flashing) to ensure the complete recording.

Notes

- If you start MD WALKMAN SYNC recording with the MD WALKMAN set to stop mode, silence may be recorded for the first few seconds until the MD WALKMAN starts playing.
- When you stop or pause the recording, the sound from the speakers may drop out for up to about 3 seconds, but this does not indicate a malfunction.
- The Smart Space and Level Synchro Recording features do not operate.

Adjusting the recording level

You can adjust the recording level by doing the following operations after step 3.

1 Press MENU/NO twice so that "Setup Menu" appears.
2 Turn MULTI JOG until "Level Adjust ?" appears.
3 Press ENTER/YES.
4 Turn MULTI JOG to select the desired recording level.
5 Press MENU/NO.

Copying track titles

When you record from a portable MiniDisc player, you can copy the title of the current track.

Models:
MZ-E45 (Hong Kong only), E44, E35, E30, E25, EP11

1 While recording, press NAME EDIT/CHARACTER.
If the current track has a title, the title appears.
If the track does not have a title, you can input a track title. (To input a track title, do steps 4 to 7 on pages 51 and 52.)
2 Press ENTER/YES.
The displayed track title is copied.
To copy track titles after editing, perform steps 1 to 8 in "Labeling an MD" (page 51).

Notes

- If you start recording from part-way through a track, the track title may not be copied.
- If you copy track titles with a portable MiniDisc recorder (MZ-R5ST (Europe only), R50, R30), incorrect characters may appear.

Marking track numbers

Press REC while recording at the point you want to add a track mark.
A track number is marked at that point.

Tip

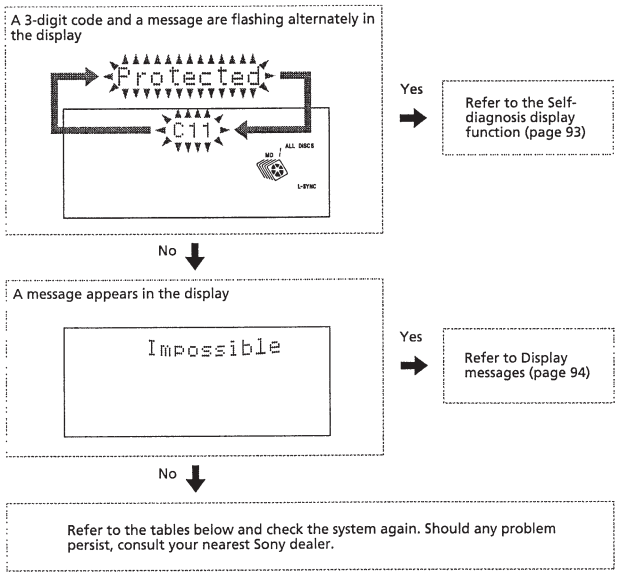
When you record from a portable MiniDisc player, the track numbers are automatically marked as on the MD in the player.

Notes

- When you record from a portable MiniDisc recorder, the track numbers may not be marked as on the MD in the recorder. In these cases, use the edit function to remark the track numbers after you finish the recording.
- The Level Synchro Recording feature does not operate while recording the sound from the MD WALKMAN.

Troubleshooting

If you run into any problem using this stereo system, check it according to the procedure described below.


A 3-digit code and a message are flashing alternately in the display
Protected
C11
Yes
Refer to the Self-diagnosis display function (page 93)
No
A message appears in the display
Impossible
Yes
Refer to Display messages (page 94)
No
Refer to the tables below and check the system again. Should any problem persist, consult your nearest Sony dealer.

General

Symptom	Cause and countermeasure
There is no sound.	The volume is too low. → Turn VOLUME clockwise.
	The headphones are connected. → Unplug the headphones.
	The speakers are not connected properly. → Connect the speaker cords properly (see page 5).

continued

Symptom	Cause and countermeasure
Sound comes from one channel or unbalanced left and right volume.	• The speaker cords are not connected properly (+/–). • The vinyl portion of the speaker cords is inserted into the SPEAKER terminals. → Connect the speaker cords properly (see page 5).
	The speaker placement (left/right) is reversed. → Place the speakers properly (see page 5).
	The heights and distances of the left and right speakers differ greatly. → Place the speakers as symmetrically as possible.
	Two or more speakers are connected to the same SPEAKER terminals. → Connect only one of the supplied speakers to each set of SPEAKER terminals.
	The connected speakers are not the supplied ones. → Connect the supplied speakers.
There is severe hum or noise.	A TV, VCR or other source of noise is placed too close to the system. → Move the system away from the source of noise.
	A refrigerator or other source of noise is connected to the same wall outlet. → Connect the system to a different wall outlet. → Install a noise filter (commercially available) to the power line.
"0:00" (for the European model) or "0:00AM" (for other models) flashes in the display.	The power cord was unplugged or a power interruption occurred, erasing the clock setting. → Set the clock again (see page 8).
The timer cannot be set.	• The clock is not set. • A power interruption occurred, erasing the clock setting. → Set the clock again (see page 8).
The timer does not function.	The timer was not set correctly before you turned off the system. → Press TIMER SELECT to set the timer and light up "DAILY" or "REC 1 – 5" in the display (see pages 65 and 67).
	The set time is incorrect. → Check the set contents and set the correct time (see pages 64 – 68).
	The TAPE CONTROL system cable of the optional TC-PX100 tape deck is not connected. → Connect the TAPE CONTROL system cable properly (see page 78).
	The timer of the connected optional component is not set. → Refer to the operating instructions included with the connected component and set the timer to the same time as the system's timer.
The remote does not function.	There is an obstacle between the remote and the system. → Remove the obstacle.
	The remote is too far from the system. → Move the remote closer to the system.
	The remote is not pointing in the direction of the system's sensor. → Point the remote at the system's sensor.
	The remote's batteries have run down. → Replace the batteries (R6/size AA).
	The system is near an inverter type fluorescent light. → Locate the system away from the fluorescent light.

CD

Symptom	Cause and countermeasure
The disc tray does not close.	The disc is not placed in the center of the tray. → Place the disc properly in the center of the tray.
	You tried to forcibly press the disc tray closed. → Always close the tray by pressing CD 1 – 5 ⏏. Trying to press the tray closed with your fingers may cause CD player trouble.
The disc does not eject.	The system was moved or shaken with a disc loaded, and the disc has become lodged inside the CD player. → Consult your nearest Sony dealer.
Play does not start.	There is no disc in the CD player. → Open the disc tray and check whether a disc is loaded.
	The disc is dirty (e.g., oil film, fingerprints). → Wipe the disc clean (see page 83).
	The disc is scratched. → Replace the disc.
	The disc you tried to play is a non-standard size or shape, or uses a non-standard recording method. → Replace the disc.
	The disc is off-center. → Place the disc properly in the center of the tray.
	The CD is inserted with the label side down. → Place the CD in the tray with the label side up.
	Moisture condensation has built up on the lens inside the CD player or on the disc. → Remove the disc and wipe away the moisture on the disc, then leave the system turned on for a few hours until the moisture evaporates.
	The CD player is not set to play mode. → Press ▷/❚❚ for the CD to start play.
The sound skips.	The disc is dirty (e.g., oil film, fingerprints). → Wipe the disc clean (see page 83).
	The disc is scratched. → Replace the disc.

continued

Symptom	Cause and countermeasure
The sound skips.	The disc you tried to play is a non-standard size or shape, or uses a non-standard recording method. → Replace the disc.
	The system is subject to vibration. → Try moving the system to a place without vibration (e.g., on top of a stable stand). → Try moving the speakers away from the system, or placing them on separate stands. When you listen to a track with bass sounds at high volume, the speaker vibration may cause the sound to skip.
Play does not start from the first track.	The CD player is in Program or Shuffle Play mode. → Press PLAY MODE repeatedly until "PROGRAM" or "SHUFFLE" disappears to return to normal play.
"—OVER—" is displayed.	You have reached the end of the disc while pressing ▶▶. → Keep pressing ◀◀ or turn MULTI JOG to return to the desired playing position.
A CD button lights even though there is no CD loaded.	The first time that you turn the system on after purchase, the buttons light for a short moment, and then turn off.
	The last time that you used the unit, you pressed I/⏻ (power) and turned the system off while the CD tray was open. → If you wait for a moment, the light will turn off. If not, press CD 1 – 5 ⏏ to open and close the trays.

Tuner (Radio)

Symptom	Cause and countermeasure
Severe hum or noise/stations cannot be received.	The broadcast station band (FM and AM for the North American model, FM, MW and LW for the European model, FM, MW and SW for other models) or frequency are not correct. → Set the proper band and frequency (see page 10).
	The antenna is not connected properly. → Connect the antenna properly (see pages 6 and 7).
	• The antenna is set up in a place with poor reception. • The signal strength is too weak. → Find a place and an orientation that provide good reception, then set up the antenna again. If you cannot obtain good reception, we recommend you connect a commercially available outdoor antenna.
Severe hum or noise/stations cannot be received.	Part of the antenna is folded, tied or rolled up. → The supplied FM lead antenna receives signals along its entire length, so make sure you extend it fully (see pages 6 and 7).
	Part of the antenna is tied together with the speaker cord. → Locate the antennas as far away from the speaker cords as possible.
	The supplied AM antenna has come off the plastic stand. → Consult your nearest Sony dealer.
	The system is affected by electrical equipment. → Try turning off the electrical equipment.
A stereo FM program cannot be received in stereo.	The tuner is set to MONO. → Press STEREO/MONO until "STEREO" appears in the display.
	Reception is poor. → See "Severe hum or noise/stations cannot be received." under "Troubleshooting" on pages 88 and 89, and check the antenna condition.
Cyclical static noise is heard while recording on an MD.	The antenna is not oriented correctly. → Adjust the antenna orientation and position until the noise stops.

MD

Symptom	Cause and countermeasure
A disc cannot be inserted.	The disc is upside-down or facing the wrong direction. → Insert the disc with the arrow side up and the arrow pointing toward the deck.
The controls do not work.	The MD is dirty or damaged. → Replace the MD with a new one.
Play does not start.	The disc is dirty (e.g., oil film, fingerprints) or scratched. → Replace the disc.
	Nothing is recorded on the disc. → Replace the disc with a recorded one.
	Moisture condensation has built up on the lens inside the MD deck or on the disc. → Insert the disc and leave the system turned on for a few hours until the moisture evaporates.
	The MD deck is not set to play mode. → Press ▷/❚❚ for the MD to start play.
The sound skips.	The disc is dirty (e.g., oil film, fingerprints) or scratched. → Replace the disc.

continued

Symptom	Cause and countermeasure
The sound skips.	The system is subject to vibration. → Try moving the system to a place without vibration (e.g., on top of a stable stand). → Try moving the speakers away from the system, or placing them on separate stands. When you listen to a track with bass sounds at high volume, the speaker vibration may cause the sound to skip.
	The inside of the system and the disc are different temperatures. → Insert the disc and wait for 10 to 20 minutes with the system turned on.
Play does not start from the first track.	The MD deck is in Program or Shuffle Play mode. → Press PLAY MODE repeatedly until "PROGRAM" or "SHUFFLE" disappears to return to normal play.
Recording or editing was done, but the TOC is not updated.	You pulled out the power cord without ejecting the MD after recording or editing an MD. → MD recording and editing contents are written to the MD when the MD is ejected, so make sure you eject the MD after recording or editing (see pages 35 and 50).
Play does not finish even when Repeat Play is not selected. Or the MD deck goes back to the first track during Shuffle or Program Play.	The MD could not be read properly, or it is not inserted completely. → Remove the MD and then reinsert it to the correct position (until it stops).
Recording is not possible.	The MD is protected against erasure ("C11" and "Protected" appear alternately). → Eject the disc and slide the tab closed to cover the hole (see page 35).
	The optional A/V component is not connected properly. → Connect the optional A/V component properly (see page 75, 78 and 79).
	The sound source is set to MD. → Switch to another sound source.
	A premastered MD is inserted in the deck. → Replace the MD with a recordable MD.
	There is no time remaining on the MD. → Replace the disc with a recordable MD, or use the Erase Function to erase unnecessary tracks (see pages 53 – 56).
	The CD disc tray is open. → Press ⏏ to close the tray.
	The power cord was unplugged or a power interruption occurred during recording. → Start recording over from the beginning.

Symptom	Cause and countermeasure
The sound from an MD you recorded is too low (or too high).	The recording level is set too low (or too high). → Readjust the recording level (see page 48).
You cannot edit.	The MD is not loaded (to the recording/playing unit). → Press ⏏ to load the MD you want to edit.

Optional components

Symptom	Cause and countermeasure
There is no sound.	The system is not set properly. → Refer to General item "There is no sound." under "Troubleshooting" on page 85 and check the condition of the system.
	The optional A/V component is not connected properly. → Connect the component properly (see pages 75, 78 and 79) while checking: • if the cords/cables are connected properly. • if the cord/cable connectors are firmly inserted all the way.
	The connected component is not turned on. → Turn on the connected component.
	The connected component has not started playing. → Refer to the operating instructions included with the connected component and start playing.
The sound from the DVD player is too loud or distorted.	FUNCTION is set to "VIDEO". → Set FUNCTION to "DVD". (If "VIDEO" is selected for FUNCTION, press MENU/NO and then press ENTER/YES to switch to "DVD". The maximum level of the signals output by a DVD player is different from that of other analog components, always be certain to switch to "DVD" when listening to sound from a DVD player. If FUNCTION is not set properly, the system may malfunction.)
The sound from the VCR is at a low volume.	FUNCTION is set to "DVD". → Set FUNCTION to "VIDEO". (If "DVD" is selected for FUNCTION, press MENU/NO and then press ENTER/YES to switch to "VIDEO". The maximum level of the signals output by a DVD player are different from that of other analog components, always be certain to switch to "VIDEO" when changing a connected component from a DVD player to a VCR or other such component. If FUNCTION is not set properly, the system may malfunction.)

continued

Symptom	Cause and countermeasure
The volume from the MD WALKMAN is low.	The input level of the selected function is low. → Adjust the input level (see page 77).
The sound from the MD WALKMAN drops out/is distorted, or noise occurs.	The MD WALKMAN is not set correctly, or is positioned incorrectly. → Set the digital megabass function, AVLS function and volume of the MD WALKMAN (see page 75). → Remove the MD WALKMAN from on top of the system and place it so that it does not touch the system.

If the system still does not operate properly after performing the above measures, reset the system as follows:

1 With the system turned on, press NAME EDIT/CHARACTER, 1/ALL and UPPER DISPLAY at the same time.

2 Press I/⏻ (power).
"RESET OK!" appears, and the system turns off.

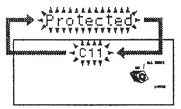
3 Unplug the power cord.

4 Plug the power cord back into the wall outlet.

The system is reset to the factory settings. All the settings you made such as the preset stations, clock, timer and CD disc titles are cleared and must be set again.

Display messages

One of the following messages may appear or flash in the display during operation.



If a 3-digit code and a message appear alternately, the Self-diagnosis display function is working. See the previous page.

MD

Message	Cause and countermeasure
Auto Cut	Silence continued for 30 seconds or more during digital recording, so the Auto Cut function activated to replace the silence with a blank of about 3 seconds and pause the recording. → Press ▷II for the MD to restart the recording at the desired point. If you do not want to shorten the space between tracks, turn off the Smart Space function (see page 44), then start recording over from the beginning.
Blank Disc	The inserted recordable MD is brand new or all tracks on the MD have been erased using the Erase Function. → —
Cannot Edit	A commercially available premastered MD is inserted in the deck. → You cannot edit a premastered MD.
	The deck is in Program or Shuffle Play mode. → Press PLAY MODE repeatedly until "PROGRAM" or "SHUFFLE" disappears to return to normal play.
Cannot REC	A commercially available premastered MD is inserted in the deck. → You cannot record on a premastered MD.
	You tried to record on an MD with FUNCTION set to MD. → Press FUNCTION to select the sound source you want to record.
Complete!!	MD editing finished normally. → —
Disc Full	There is no time remaining on the disc. → Replace the disc with a new one.
Impossible	You tried to do an impossible MD editing operation. → Start editing over from the beginning (see pages 56, 59 and 60).
	You cannot combine the tracks due to the system limitations of MDs. → Editing cannot be done as specified. MDs do not record a track continuously, but instead record the data efficiently while searching for empty space on the disc. This lets you record and edit an MD repeatedly. However, when you repeatedly record and edit an MD, the track is recorded bit by bit scattered over the disc. These scattered tracks cannot be combined with other tracks due to the system limitations of MDs.

Message	Cause and countermeasure
MD PULL DISC	There is already an MD loaded in the MD recording/playing unit, but there are 5 MDs in the slots so the loaded MD cannot be removed. → Remove an MD from a slot.
MD RE-INSERT!	The transport cartridge is still inserted. → Turn off the system and wait for the mechanism to come to a complete stop, then remove the cartridge.
	The MD was inserted in the slot in the wrong direction. → Turn off the system and wait for the mechanism to come to a complete stop, then remove the MD.
	The MD is not inserted completely. → Remove the MD and then reinsert it to the correct position (until it stops).
	The MD is not inserted to the correct position. → Reinsert the MD. If the MD deck still does not operate, turn the system off and then on again. After you press the power button, the MD is ejected to the slot and the system turns off. If the MD is not ejected to the slot, consult your nearest Sony dealer.
Name Full !!	There is no more space to store disc or track titles (you have already input 1,700 characters). → Erase unnecessary track titles, then input the title again.
New Track	You specified recording on a brand new MD or after the recorded tracks (e.g. previously unrecorded space). → —
No Disc	There is no disc in the MD deck. → —
No Name	You tried to show the title of a non-labeled disc or track. → You can assign disc and track titles to a recordable MD (see page 52).
No Track	The inserted disc has a disc title but no tracks. → —
—OVER—	You have reached the end of the disc while pressing ▶▶ during playing pause. → Keep pressing ◀◀ or turn MULTI JOG to return to the desired playing position.
Premastered	You tried to record on a premastered MD. → —
Program Clear!	You inserted a disc into a slot containing an MD included in a program you made (whose MD 1 – 5 button lights green), so the entire program was cleared. → Make the program again.
Push STOP !	You pressed PLAY MODE while an MD is playing. → You cannot change the play mode during play. Press ■ for the MD to stop play, then press PLAY MODE.
–Rehearsal–	The portion to be divided by the Divide Function is being played for confirmation. → Listen to the played contents to confirm the position to be divided (see page 58).
Release	The system is ejecting the disc. → —

continued

Display messages (continued)

Message	Cause and countermeasure
Smart Space	Silence continued for 3 or more but less than 30 seconds during digital recording, so the Smart Space function activated to replace the silence with a blank of about 3 seconds. → If you do not want to shorten the space between tracks, turn off the Smart Space function (see page 44).
Text Protect	There is information in the CD text that cannot be recorded on an MD. → Press NAME EDIT/CHARACTER and then ENTER/YES to record the title of the current track.
TOC Reading	The deck is reading the MD Table of Contents (TOC). → Wait until "TOC Reading" disappears. Do not move the deck until "TOC Reading" disappears to ensure proper reading.
TOC writing	The MD Table of Contents (TOC) is being updated. → Wait until "TOC writing" disappears. Do not move the deck until "TOC writing" disappears to ensure the complete recording or editing.
Track End	You have reached the end of the disc while adjusting the position to be divided by the Divide Function. → Change the position (see page 58).

Tuner (Radio)

Message	Cause and countermeasure
OFF TIME NG !	You have set the start time and the end time for timer recording to the same time. → Reset the times so that they are different. (pages 64 and 67)

CD

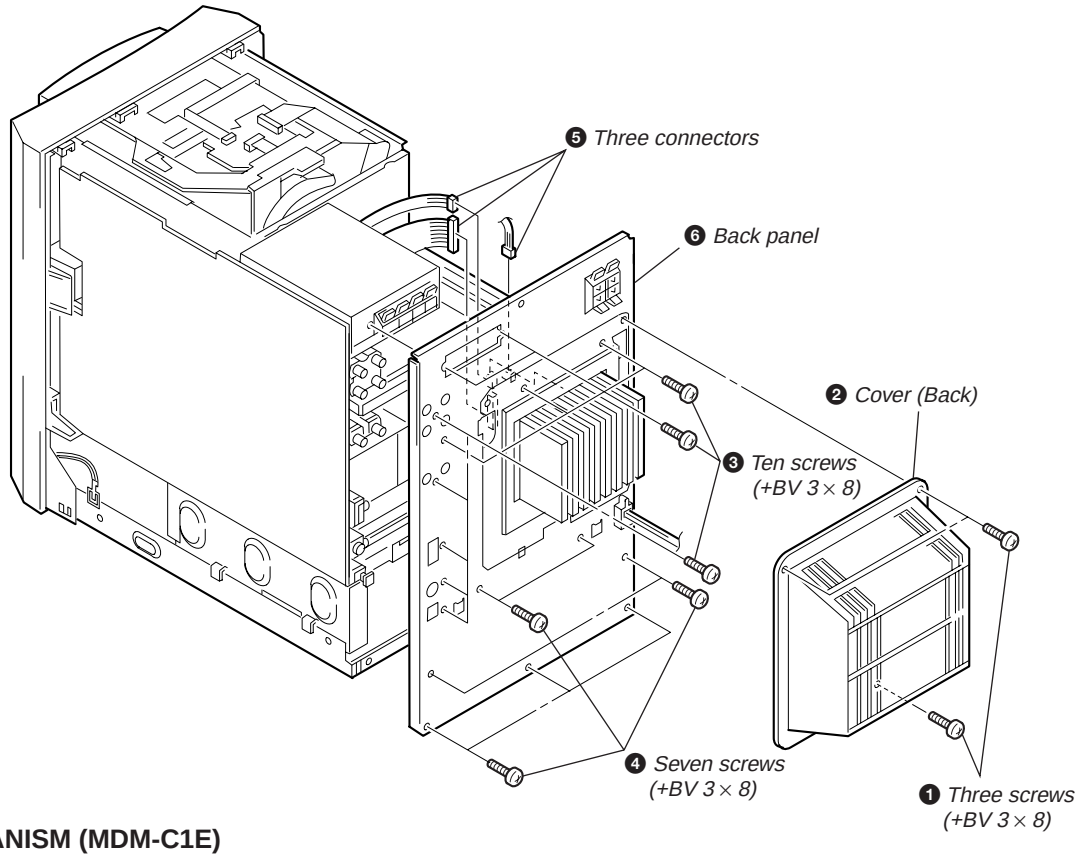
Message	Cause and countermeasure
Check and CD 1 (or 2 – 5) Position appear alternately	The disc could not be read properly. → Insert the disc whose number is displayed again.
Complete!!	CD editing (Disc Memo) finished normally. → —
File Full	There is no more space to store disc titles (you have already input 100 disc titles). → Erase unnecessary disc titles, then input the disc title again (see page 31).
No Disc	There is no disc in the CD player. → —
—OVER—	You have reached the end of the disc while pressing ▶▶. → Keep pressing ◀◀ or turn MULTI JOG to return to the desired playing position.

SECTION 4
DISASSEMBLY

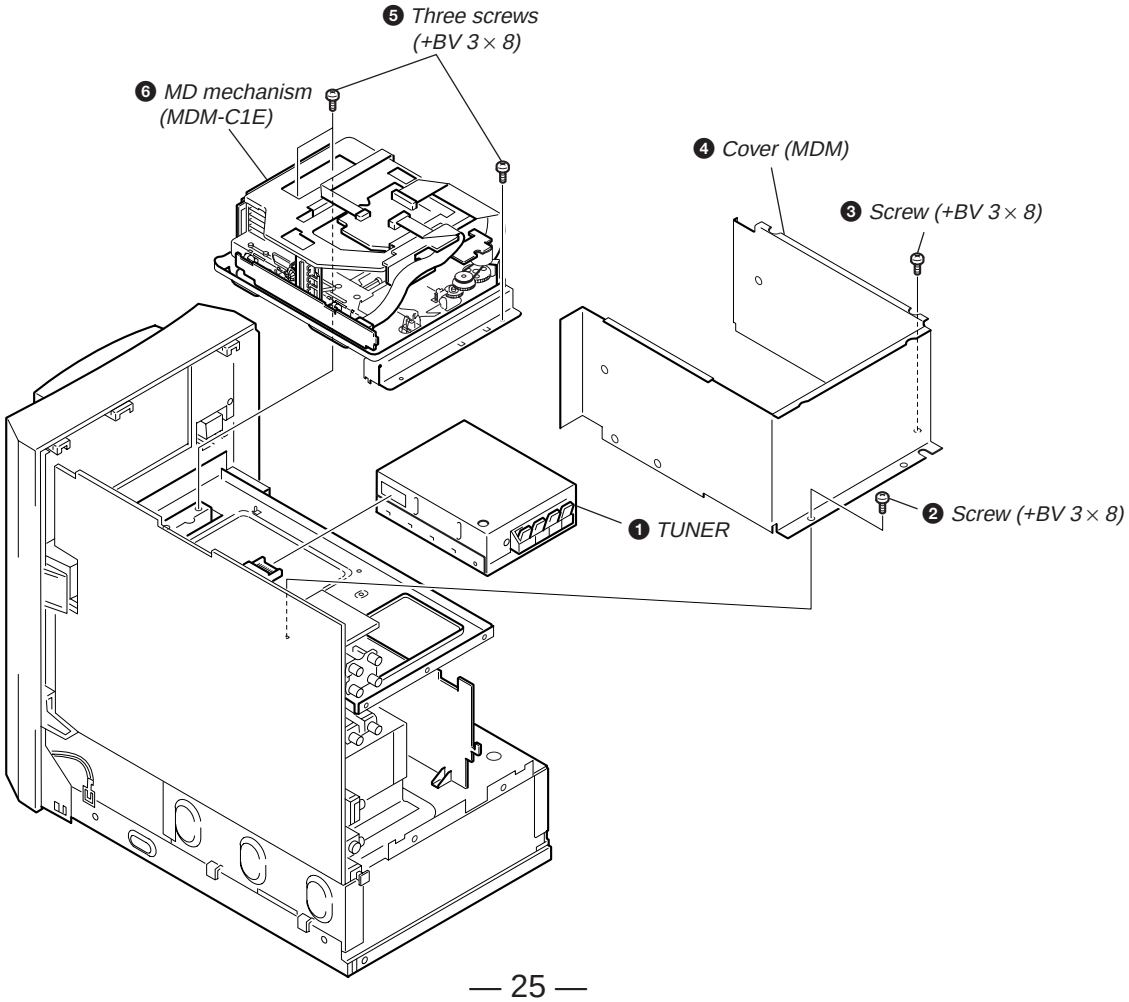
Note : Follow the disassembly procedure in the numerical order given.

4-1. BACK PANEL

• Remove the upper cover first.

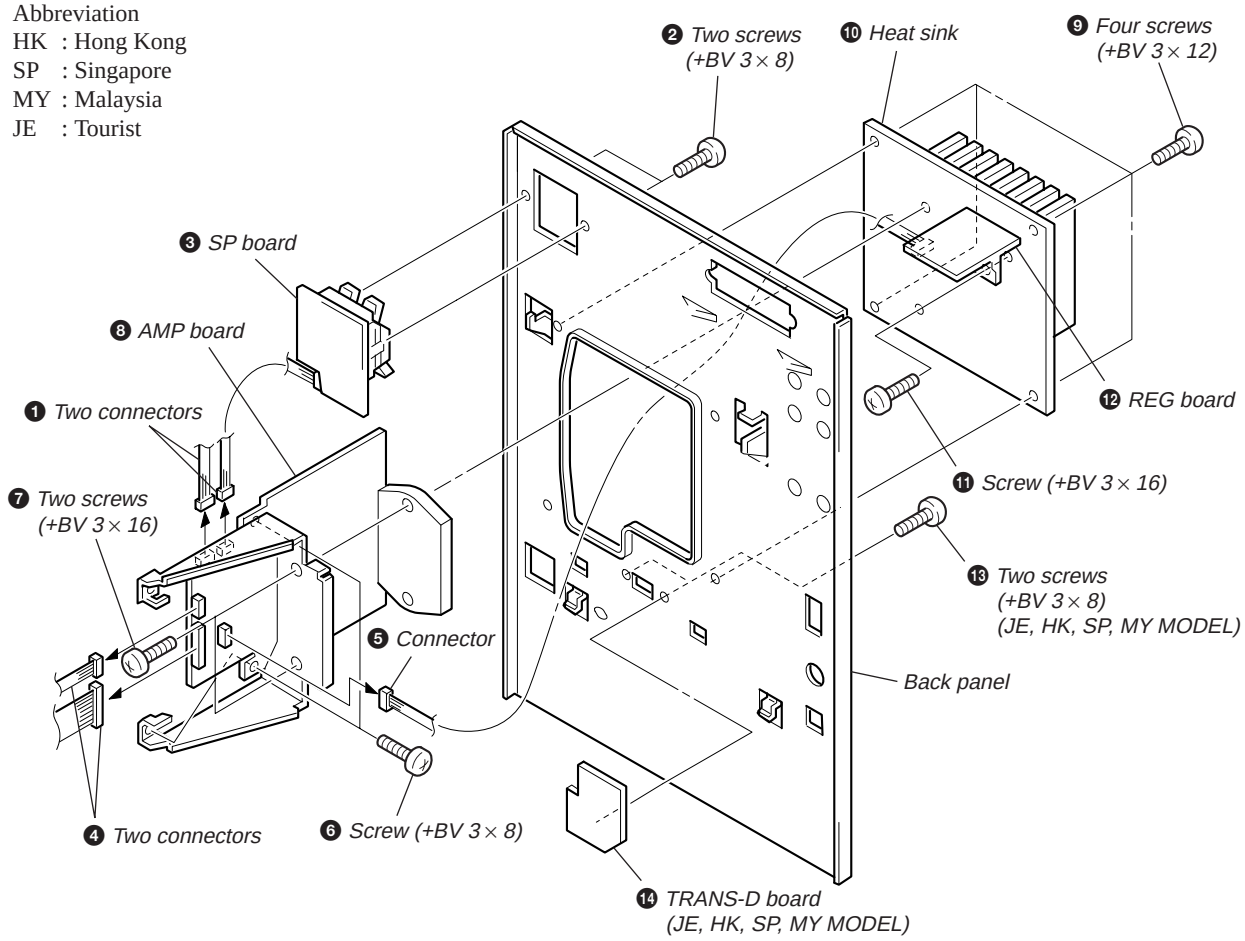


4-2. MECHANISM (MDM-C1E)

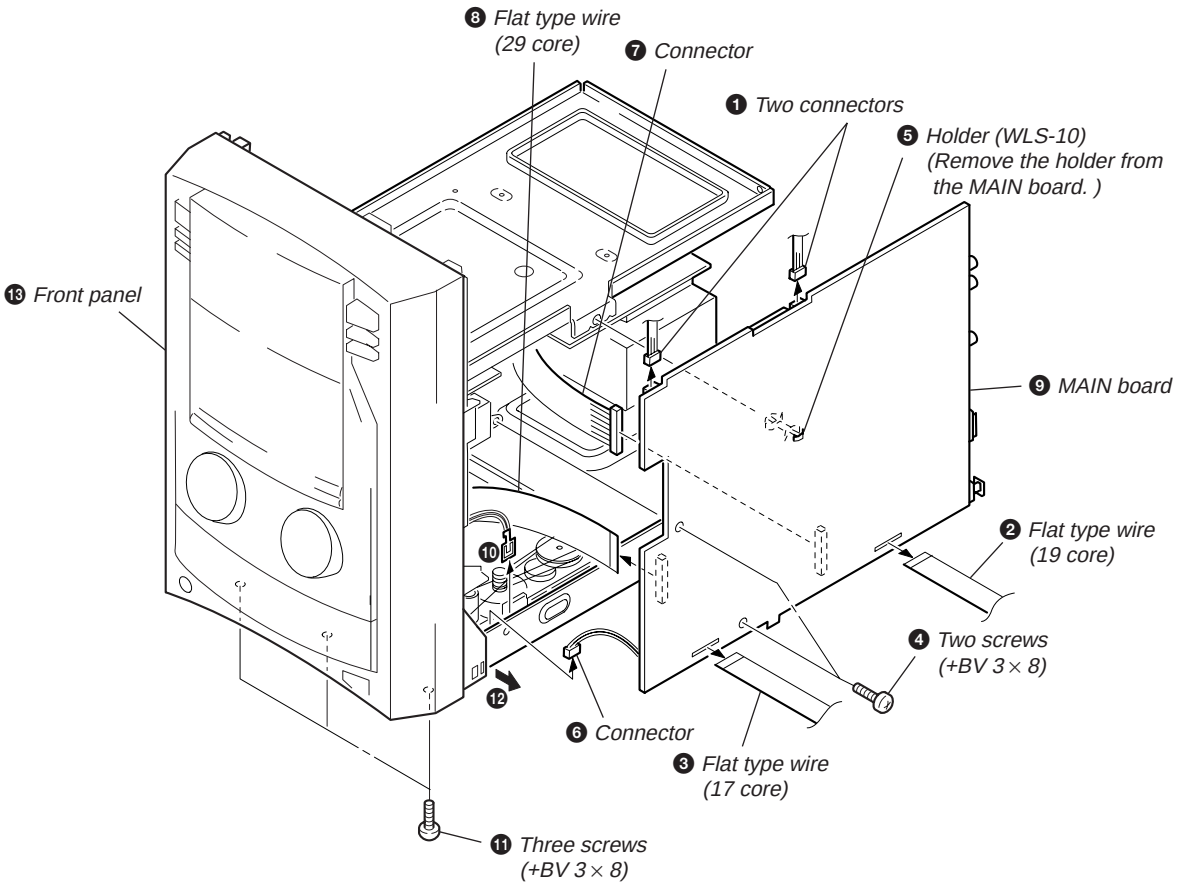


4-3. SP BOARD, AMP BOARD, REG BOARD, TRANS-D BOARD (JE, HK, SP, MY MODEL)

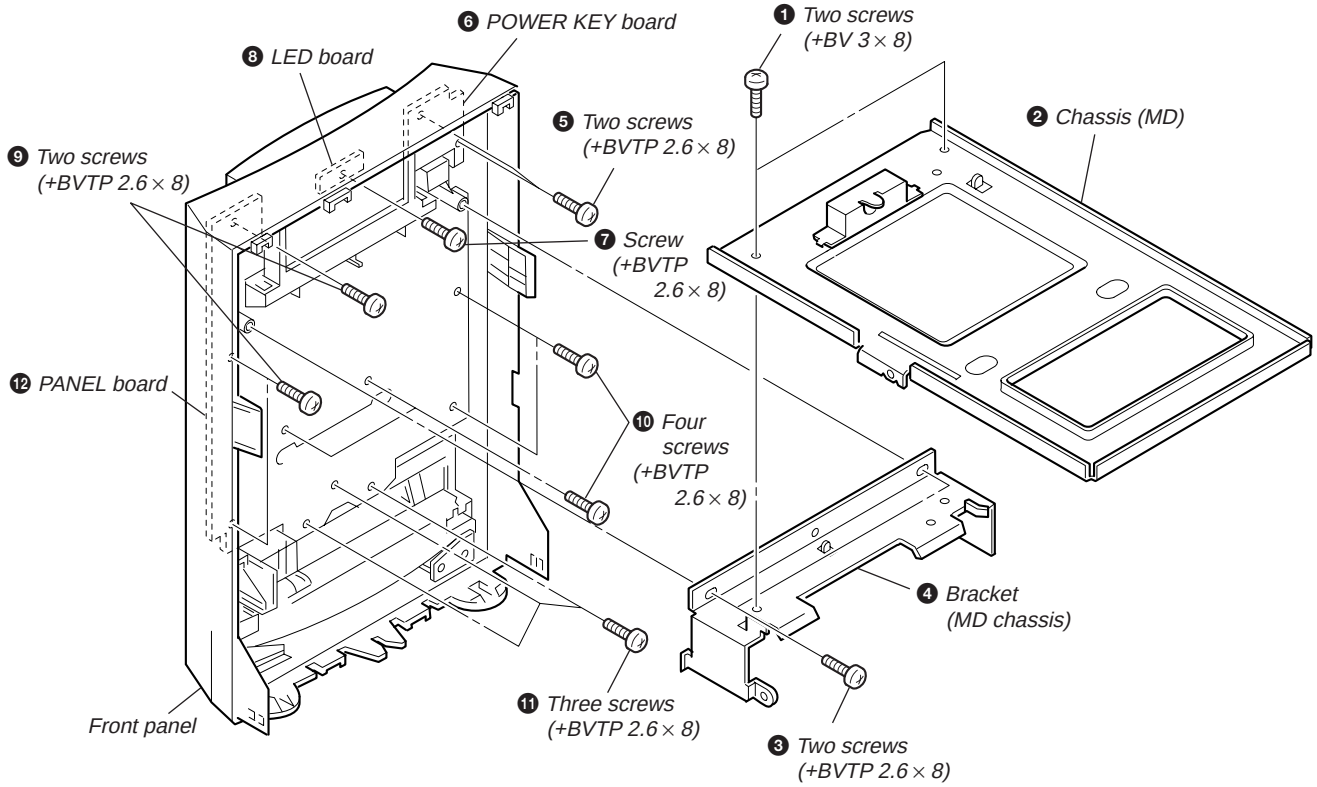
Abbreviation
HK : Hong Kong
SP : Singapore
MY : Malaysia
JE : Tourist


❷ Two screws (+BV 3× 8)
❿ Heat sink
❾ Four screws (+BV 3× 12)
❸ SP board
❽ AMP board
❶ Two connectors
❼ Two screws (+BV 3× 16)
⓬ REG board
⓫ Screw (+BV 3× 16)
⓭ Two screws (+BV 3× 8) (JE, HK, SP, MY MODEL)
❺ Connector
Back panel
❹ Two connectors
❻ Screw (+BV 3× 8)
⓮ TRANS-D board (JE, HK, SP, MY MODEL)

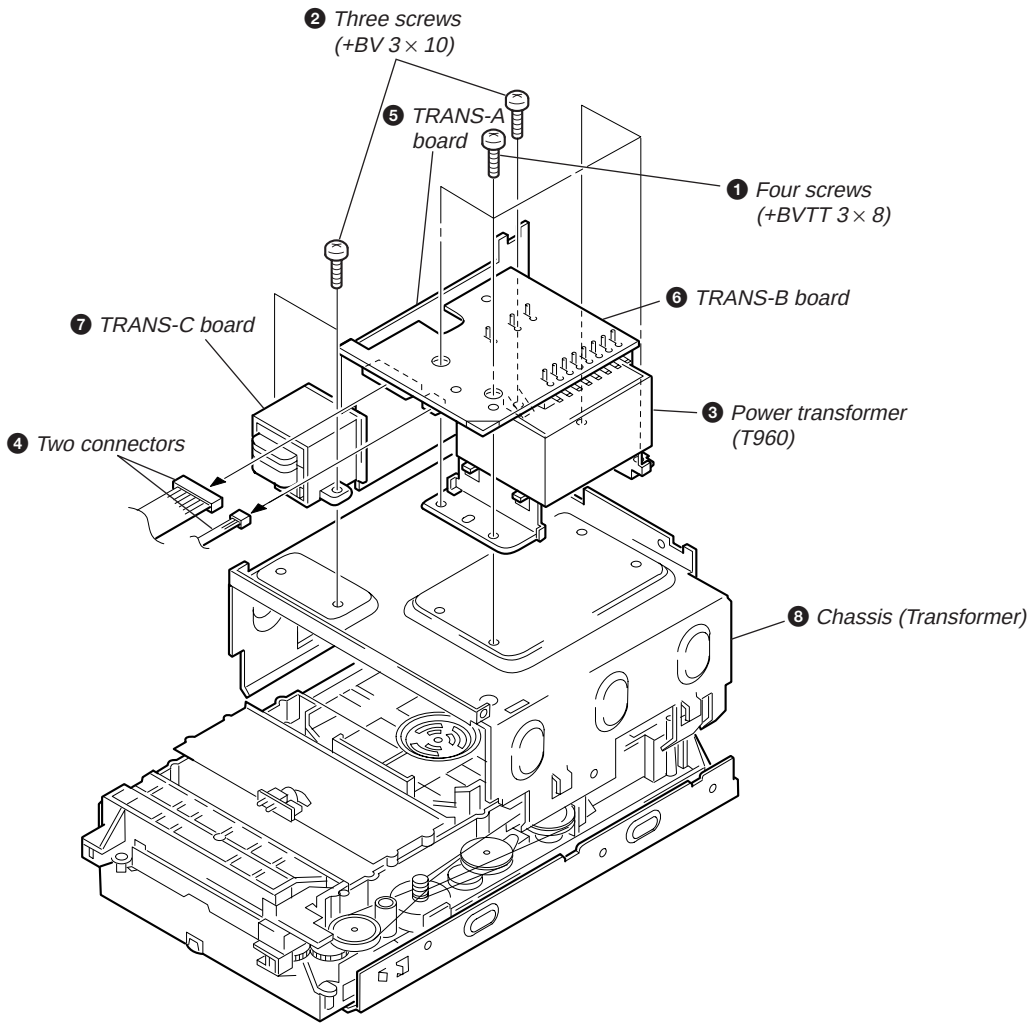
4-4. FRONT PANEL


❽ Flat type wire (29 core)
❼ Connector
❶ Two connectors
❺ Holder (WLS-10) (Remove the holder from the MAIN board.)
⓭ Front panel
❾ MAIN board
❷ Flat type wire (19 core)
❿
❹ Two screws (+BV 3× 8)
⓬
❻ Connector
❸ Flat type wire (17 core)
⓫ Three screws (+BV 3× 8)

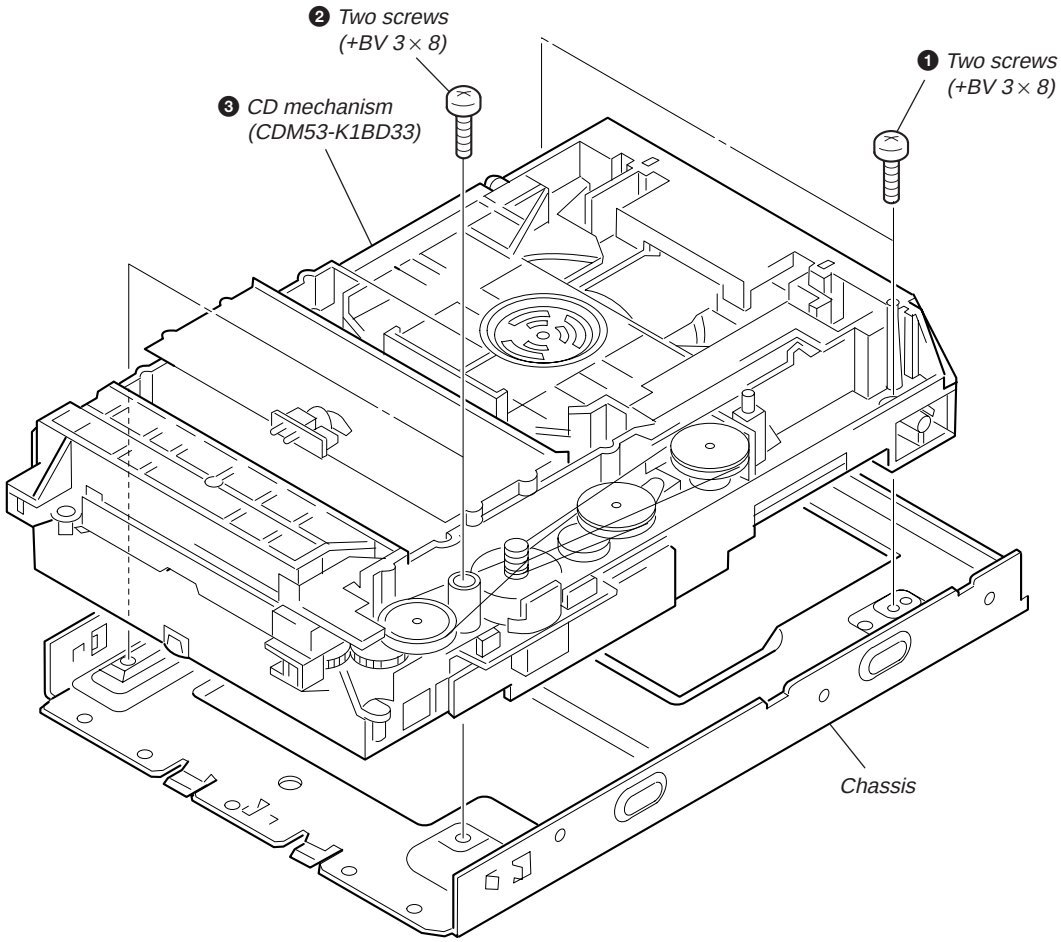
4-5. POWER KEY BOARD, LED BOARD, PANEL BOARD


❻ POWER KEY board
❽ LED board
❶ Two screws (+BV 3× 8)
❷ Chassis (MD)
❺ Two screws (+BVTP 2.6× 8)
❾ Two screws (+BVTP 2.6× 8)
❼ Screw (+BVTP 2.6× 8)
⓬ PANEL board
❿ Four screws (+BVTP 2.6× 8)
❹ Bracket (MD chassis)
Front panel
⓫ Three screws (+BVTP 2.6× 8)
❸ Two screws (+BVTP 2.6× 8)

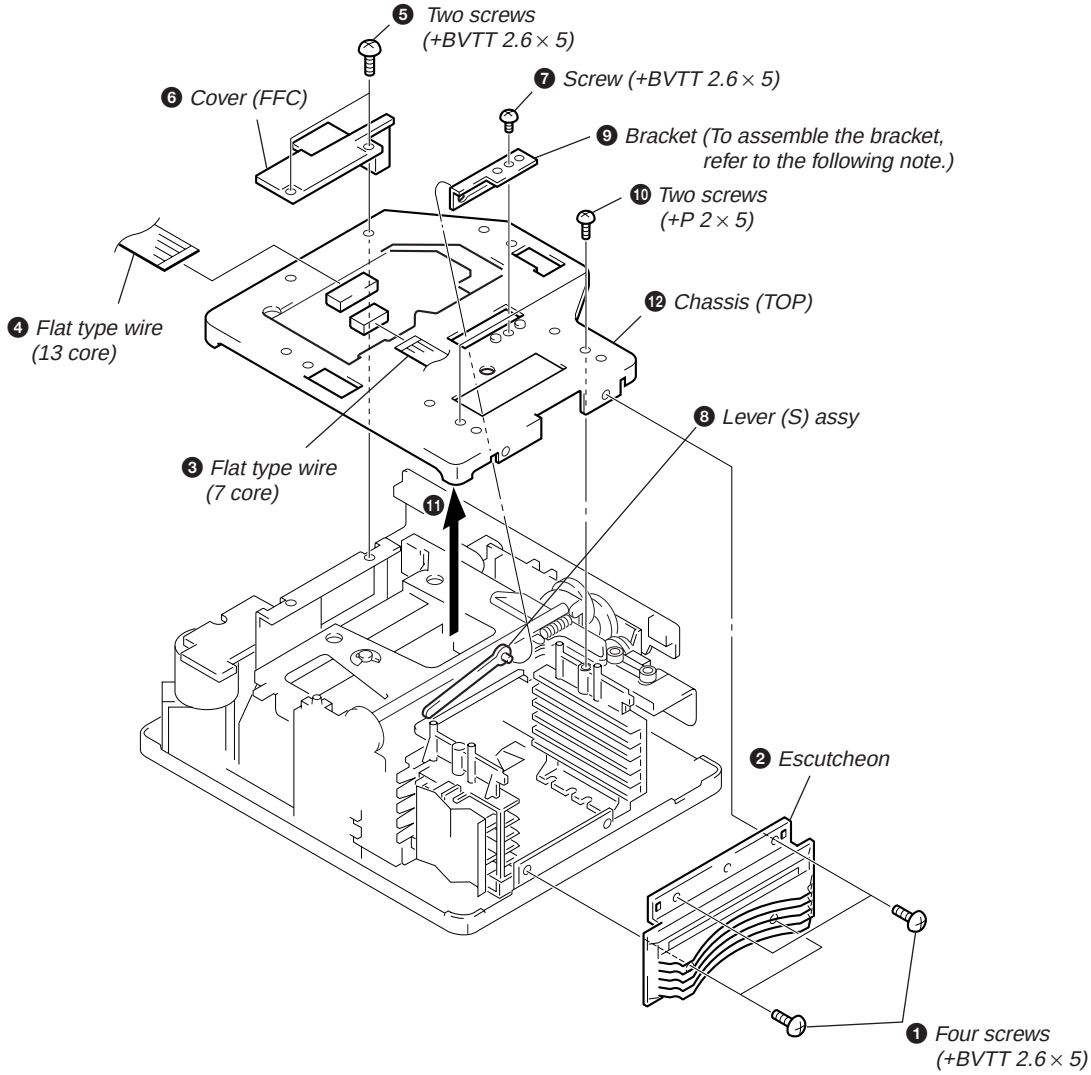
4-6. POWER TRANSFORMER (T960), TRANS-A/B/C BOARD



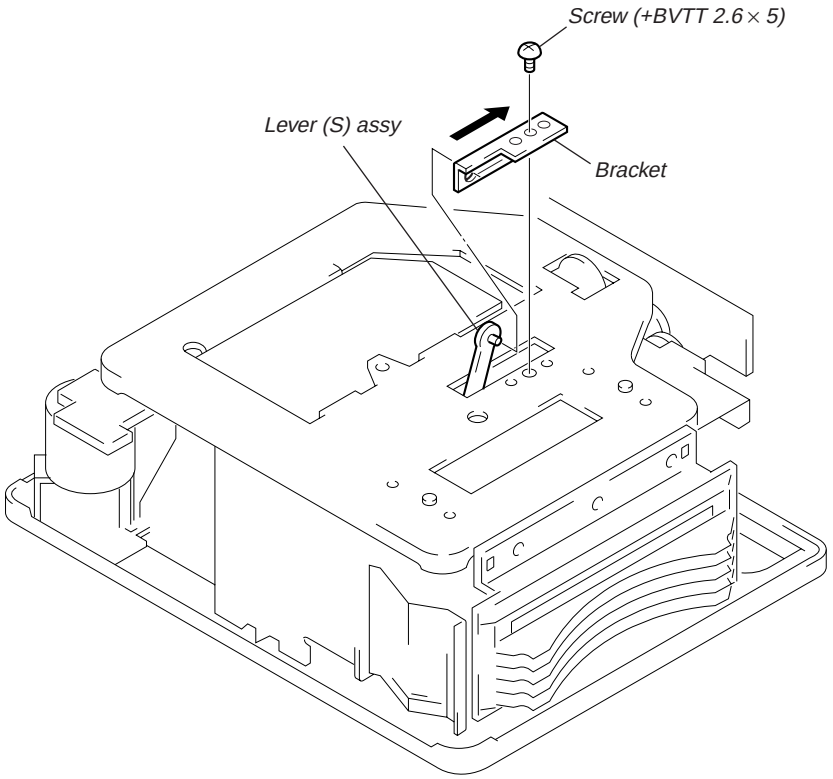
4-7. CD MECHANISM (CDM53-K1BD33)



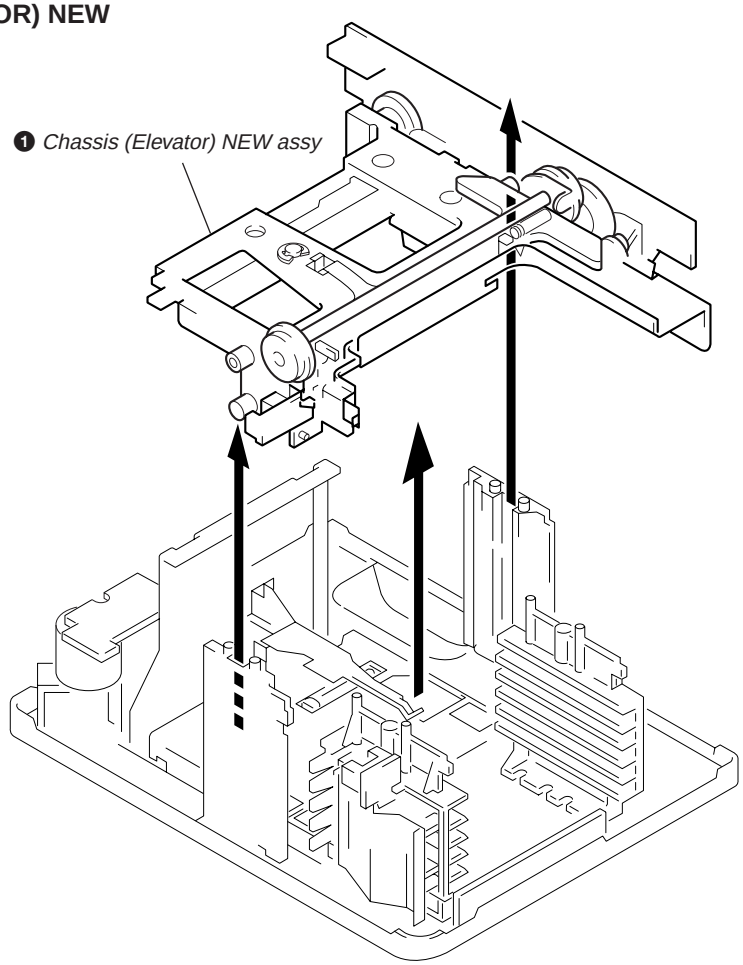
4-8. ESCUTCHEON, CHASSIS (TOP)



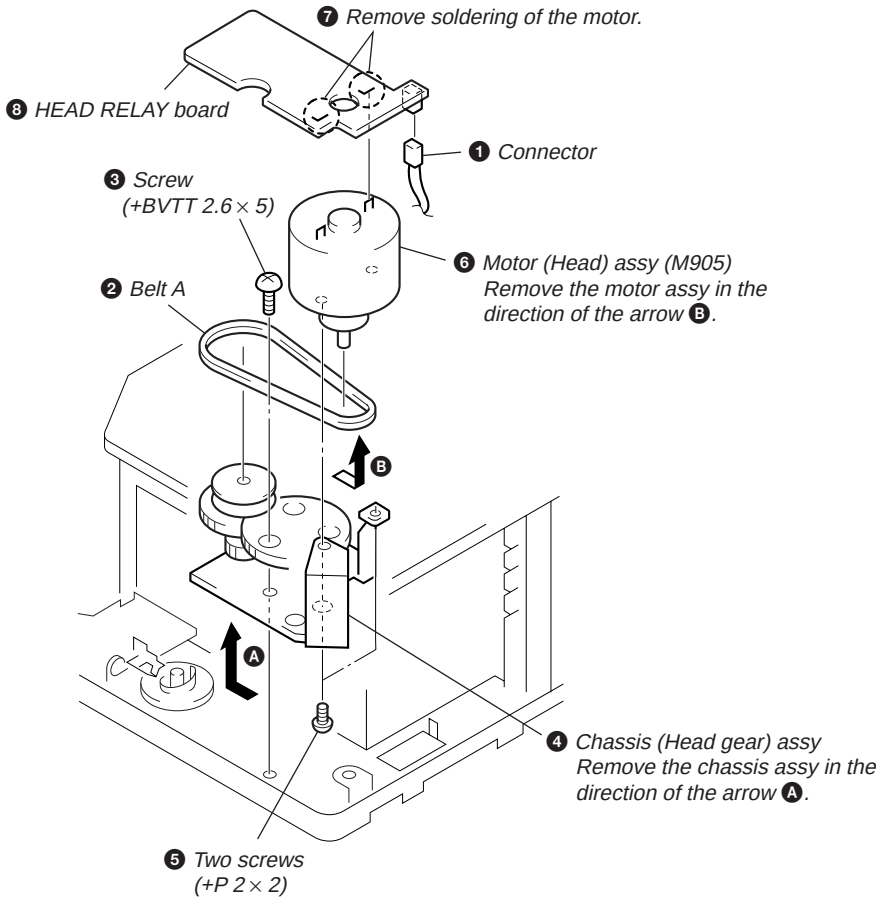
Note: When assembling the bracket, raise the lever (S) assembly, engage it with the bracket, and slide them in the direction of the arrow.



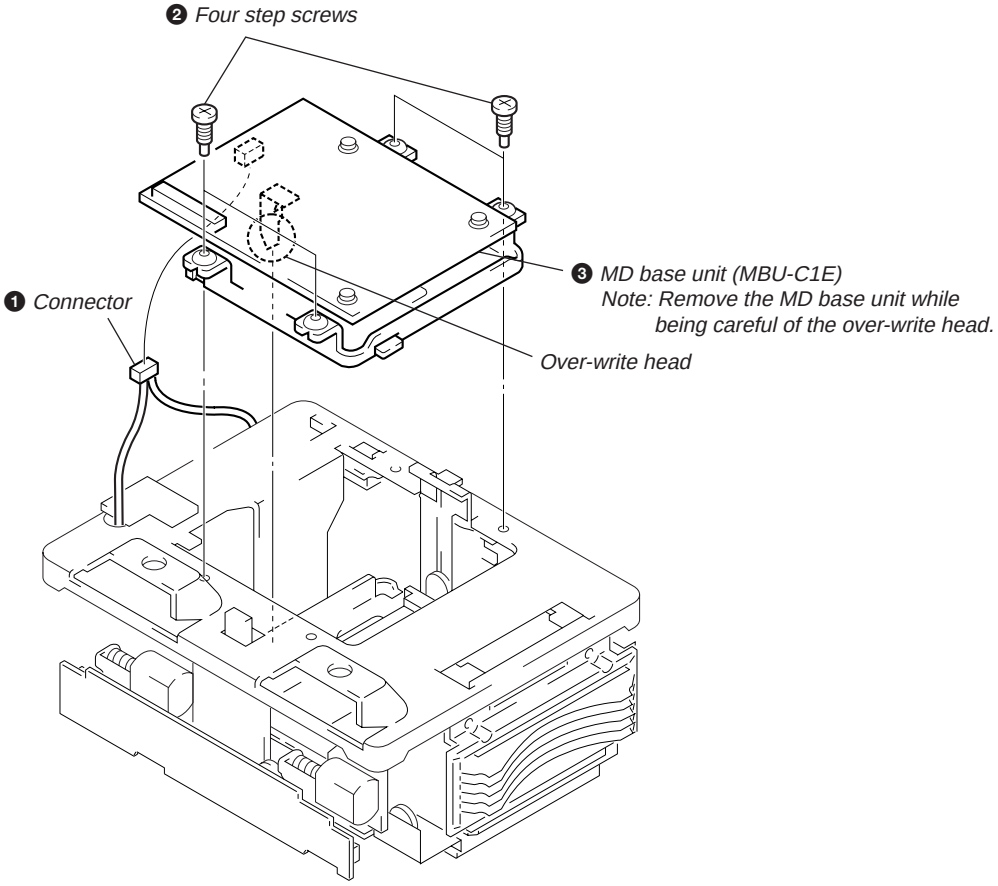
4-9. CHASSIS (ELEVATOR) NEW



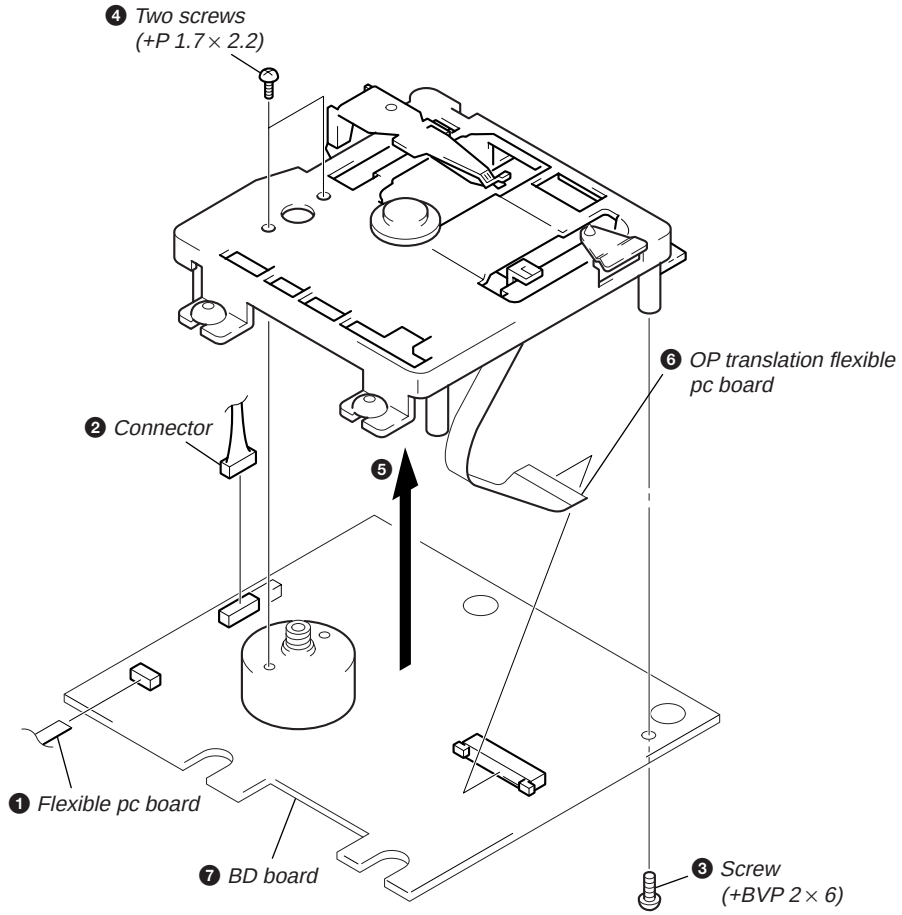
4-10. MOTOR (HEAD) ASSY (M905), HEAD RELAY BOARD



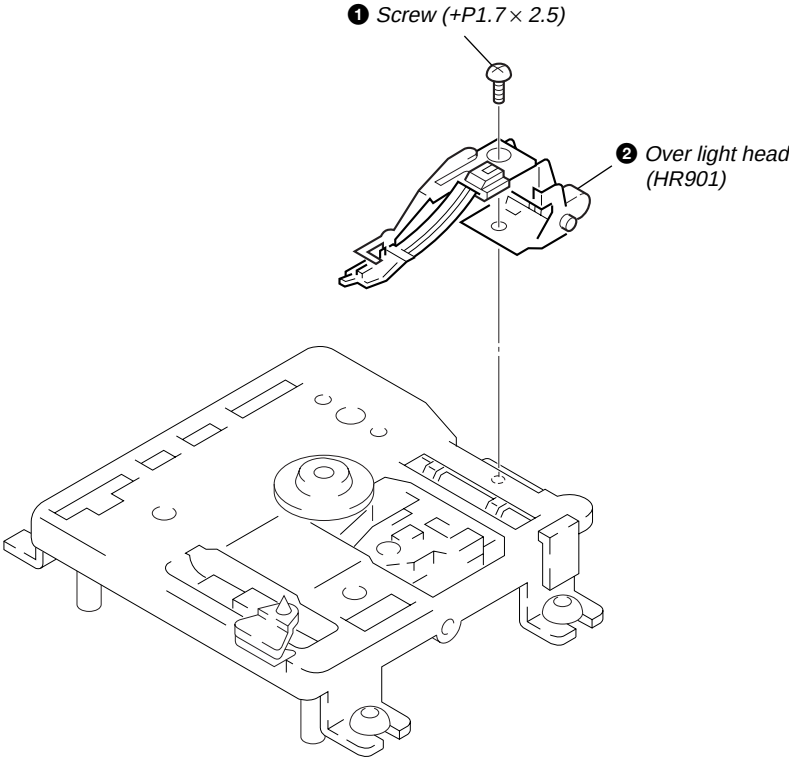
4-11. MD BASE UNIT (MBU-C1E)


❷ Four step screws
❸ MD base unit (MBU-C1E)
Note: Remove the MD base unit while being careful of the over-write head.
❶ Connector
Over-write head

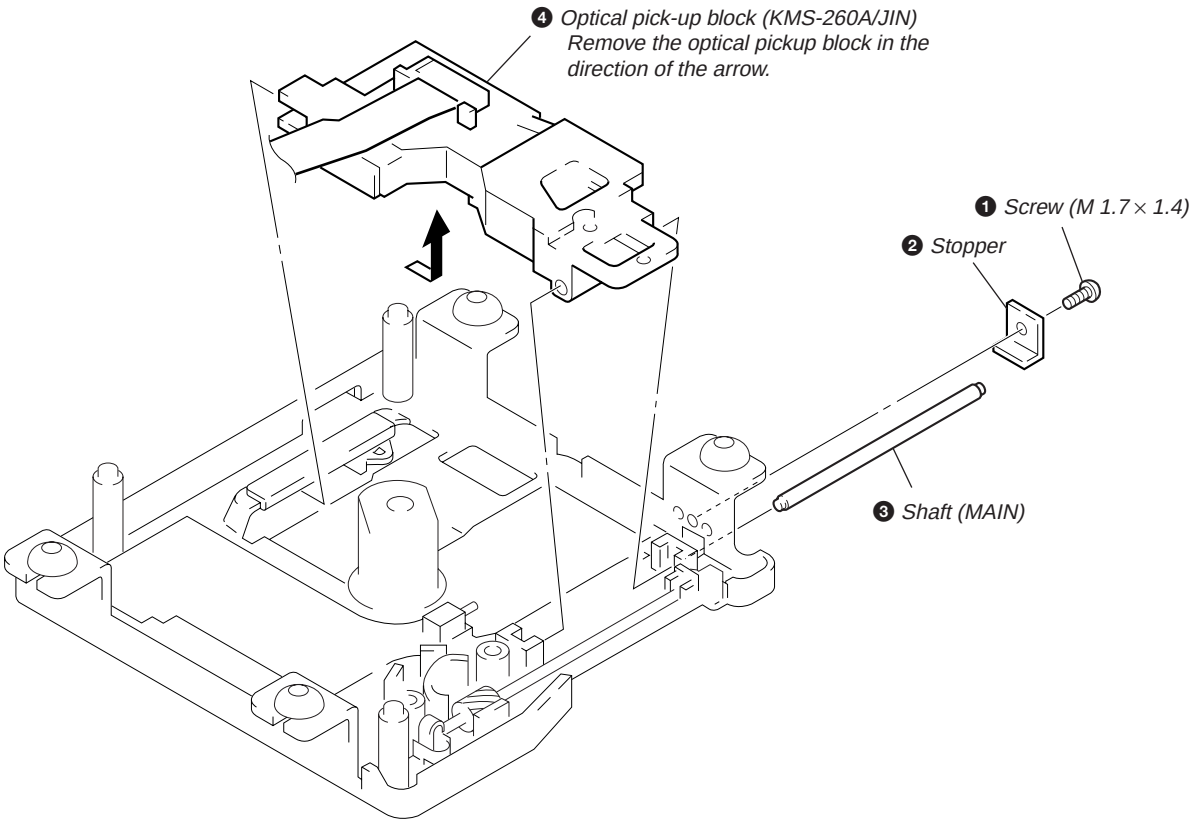
4-12. BD BOARD



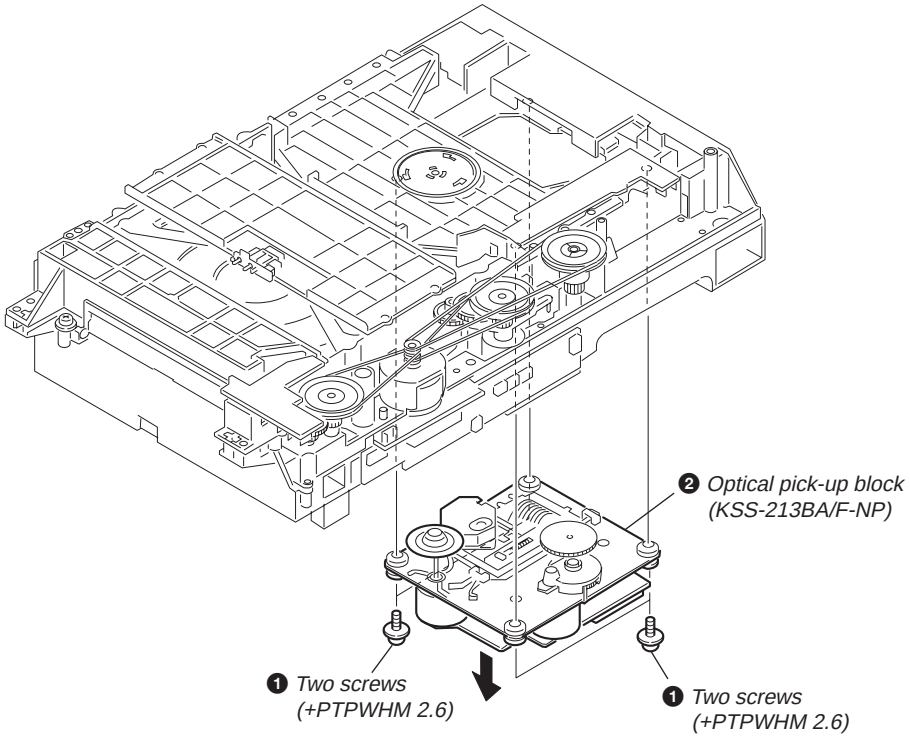
4-13. OVER LIGHT HEAD (HR901)



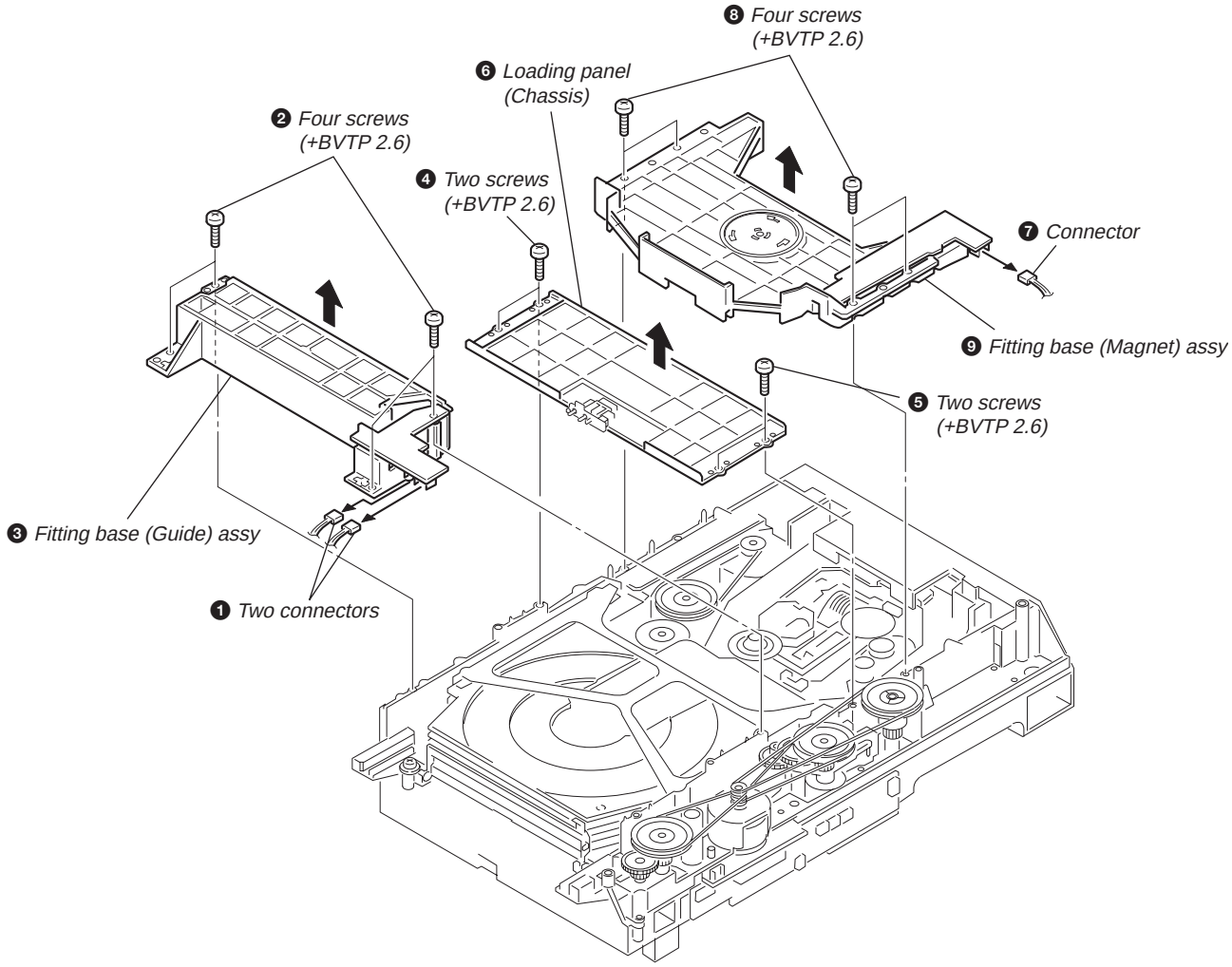
4-14. MD OPTICAL PICK-UP BLOCK (KMS-260A/J1N)


❹ Optical pick-up block (KMS-260A/JIN)
Remove the optical pickup block in the direction of the arrow.
❶ Screw (M 1.7 × 1.4)
❷ Stopper
❸ Shaft (MAIN)

4-15. CD OPTICAL PICK-UP BLOCK (KSS-213BA/F-NP)

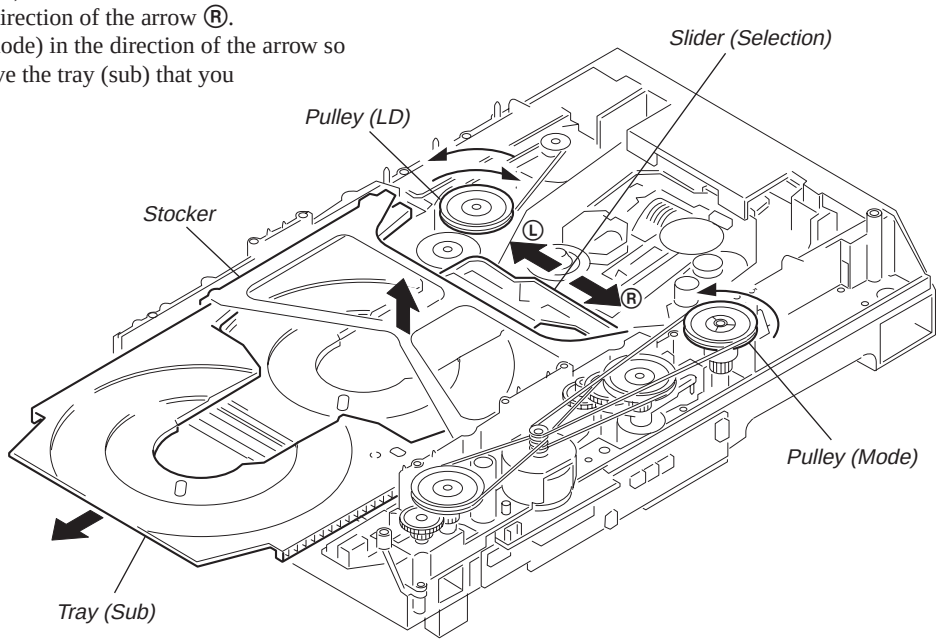


4-16. FITTING BASE (GUIDE/MAGNET) ASSY



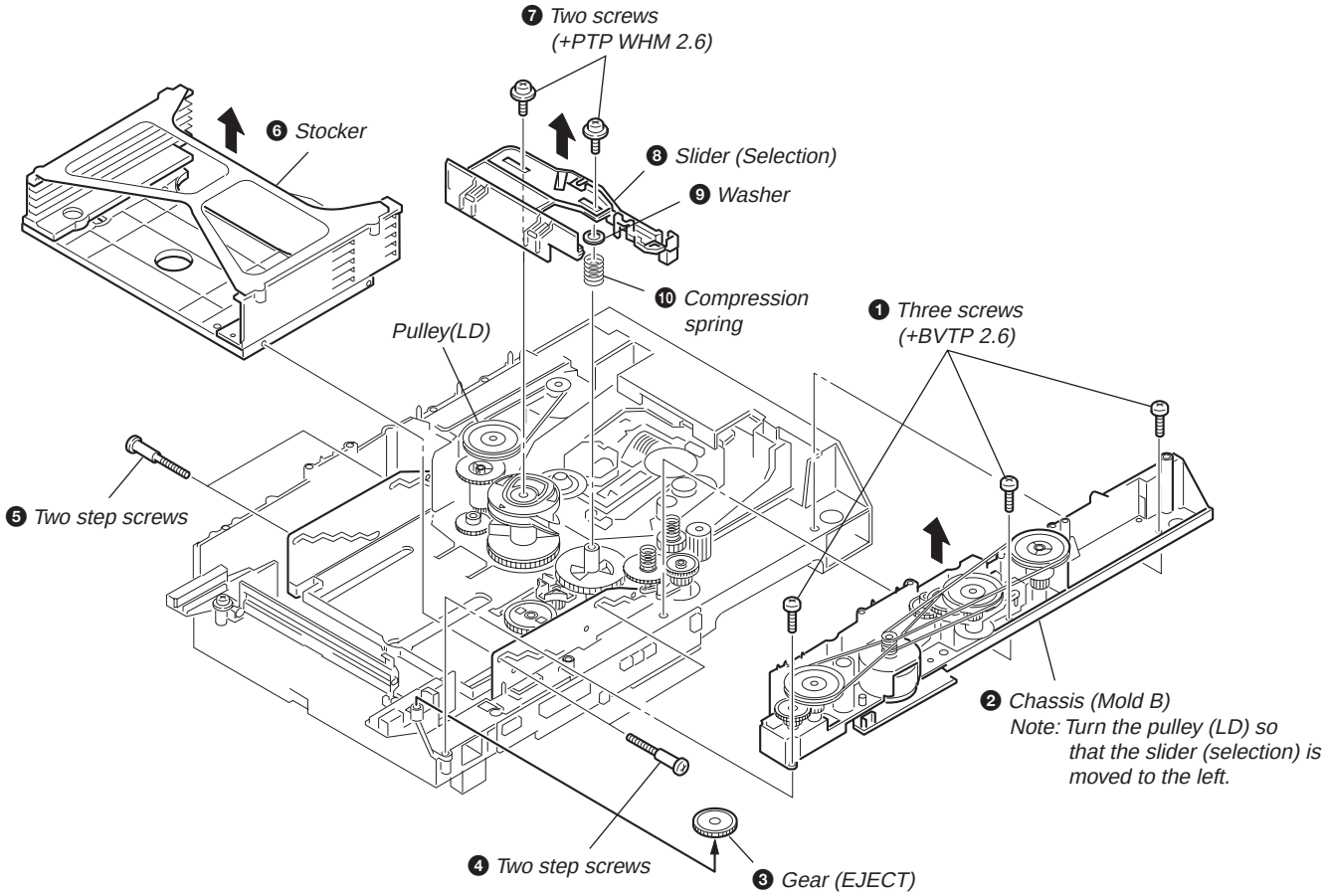
4-17. TRAY (SUB)

❶ Turn the pulley (LD) and move the slider (selection) in the direction of the arrow Ⓛ.
❷ Turn the pulley (mode) in the direction of the arrow to adjust the tray (sub) that you want to remove.
(It depends on the height and position of the stocker.)
❸ Turn the pulley (LD) and move the slider (selection) in the direction of the arrow Ⓡ.
❹ Turn the pulley (mode) in the direction of the arrow so that you can remove the tray (sub) that you want to remove.

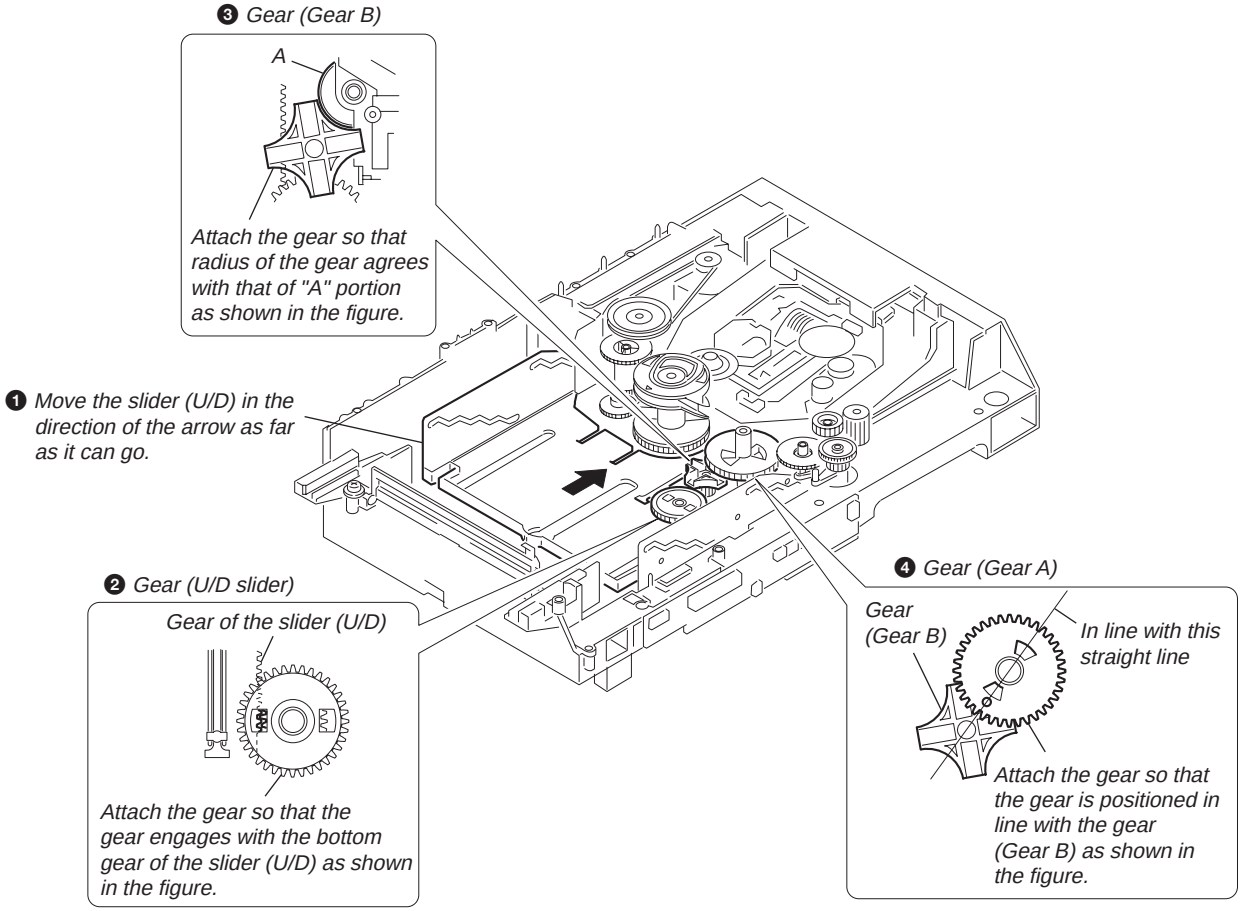


4-18. CHASSIS (MOLD B), STOCKER, SLIDER (SELECTION)

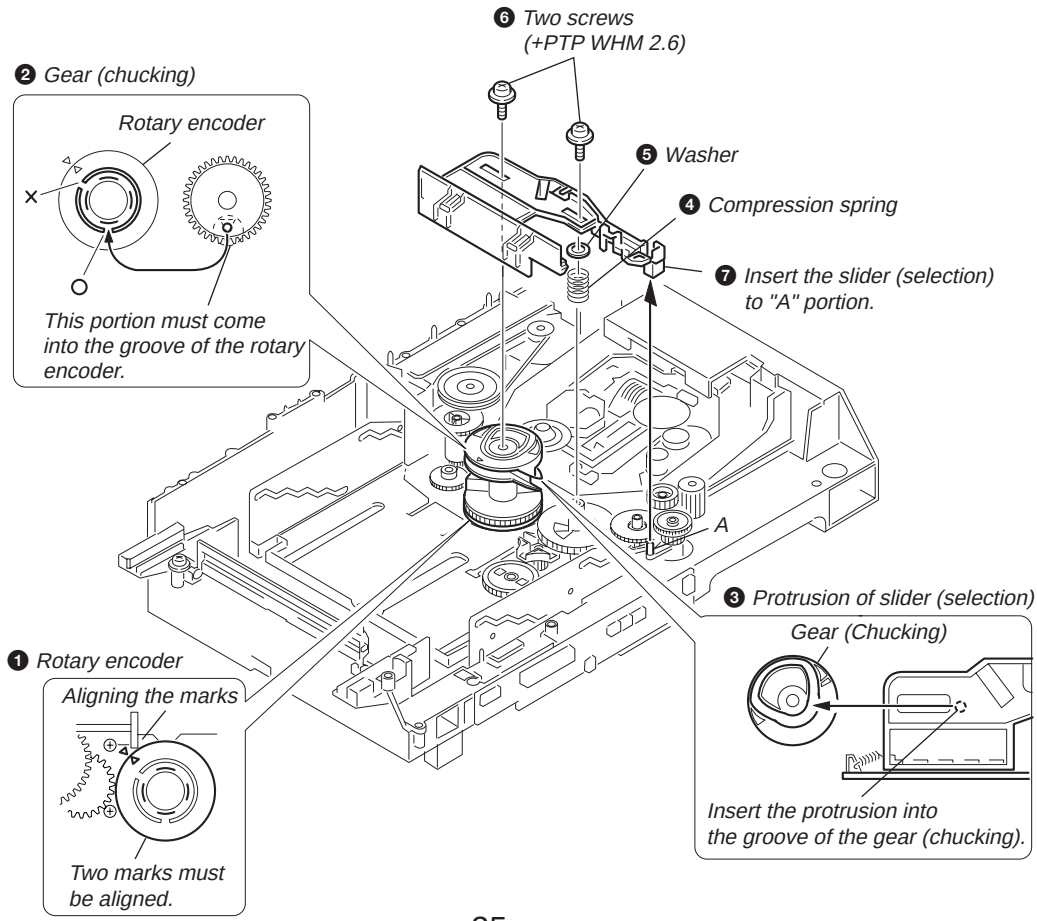
Note: When assembling the parts, refer to pages 35 and 36.


❼ Two screws (+PTP WHM 2.6)
❻ Stocker
❽ Slider (Selection)
❾ Washer
❿ Compression spring
❶ Three screws (+BVTP 2.6)
Pulley(LD)
❺ Two step screws
❷ Chassis (Mold B)
Note: Turn the pulley (LD) so that the slider (selection) is moved to the left.
❹ Two step screws
❸ Gear (EJECT)

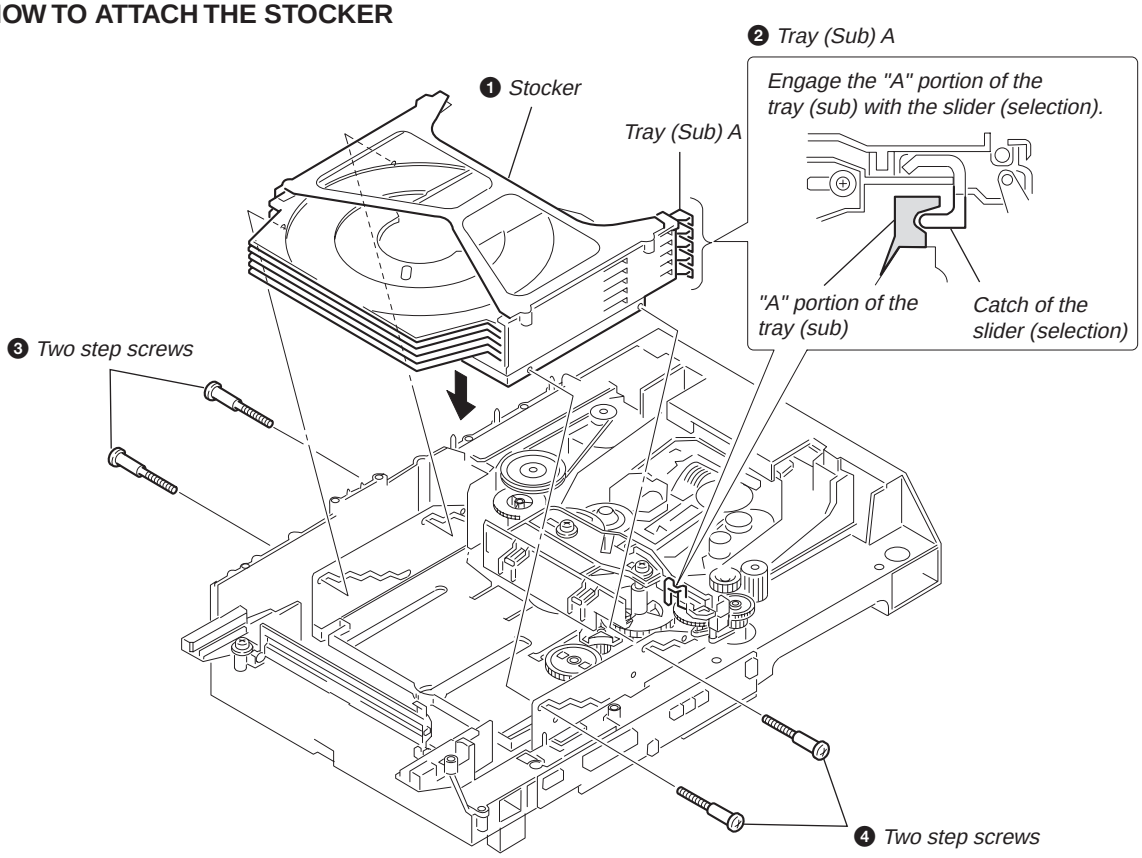
4-19. HOW TO ASSEMBLE THE GEARS


❸ Gear (Gear B)
A
Attach the gear so that radius of the gear agrees with that of "A" portion as shown in the figure.
❶ Move the slider (U/D) in the direction of the arrow as far as it can go.
❷ Gear (U/D slider)
Gear of the slider (U/D)
Attach the gear so that the gear engages with the bottom gear of the slider (U/D) as shown in the figure.
❹ Gear (Gear A)
Gear (Gear B)
In line with this straight line
Attach the gear so that the gear is positioned in line with the gear (Gear B) as shown in the figure.

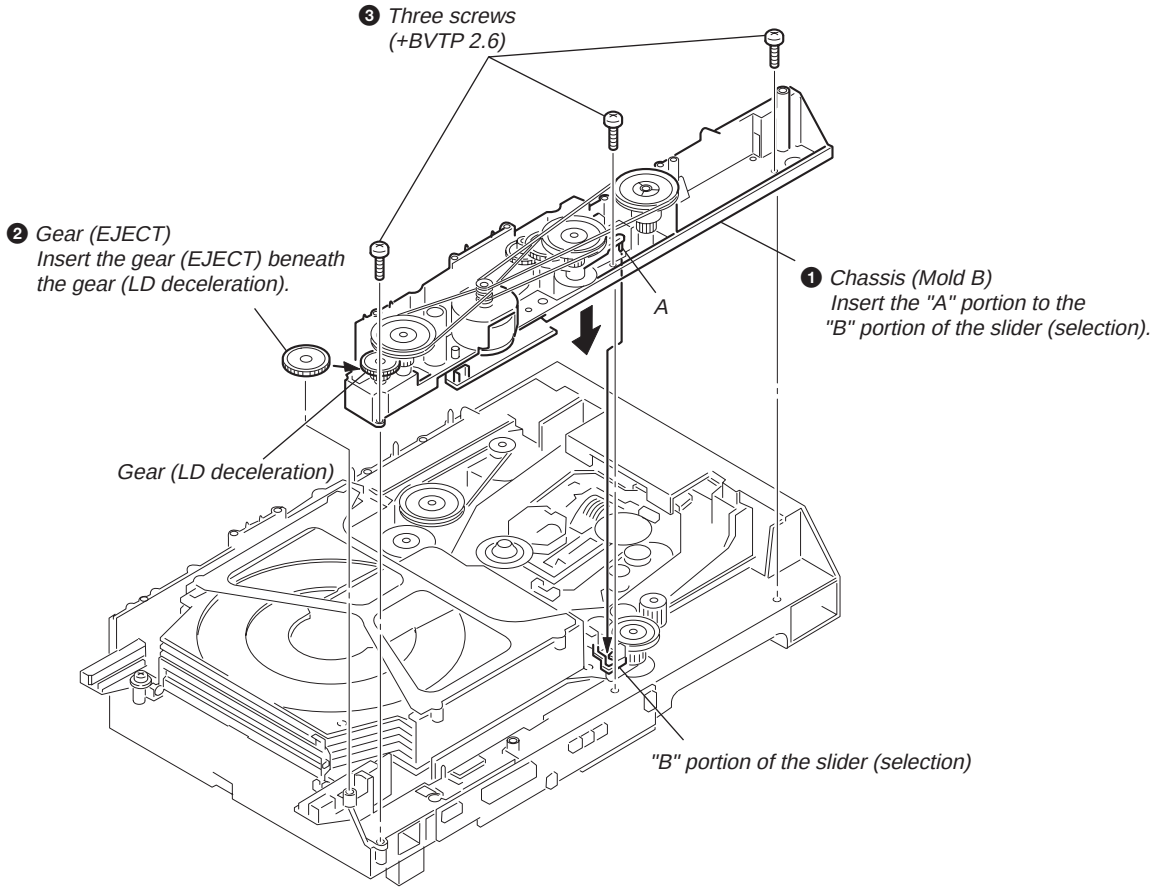
4-20. HOW TO ATTACH THE SLIDER (SELECTION)


❻ Two screws (+PTP WHM 2.6)
❷ Gear (chucking)
Rotary encoder
X
This portion must come into the groove of the rotary encoder.
❺ Washer
❹ Compression spring
❼ Insert the slider (selection) to "A" portion.
A
❸ Protrusion of slider (selection)
Gear (Chucking)
Insert the protrusion into the groove of the gear (chucking).
❶ Rotary encoder
Aligning the marks
Two marks must be aligned.

4-21. HOW TO ATTACH THE STOCKER


❷ Tray (Sub) A
Engage the "A" portion of the tray (sub) with the slider (selection).
❶ Stocker
Tray (Sub) A
"A" portion of the tray (sub)
Catch of the slider (selection)
❸ Two step screws
❹ Two step screws

4-22. HOW TO ATTACH THE CHASSIS (MOLD B)


❸ Three screws (+BVTP 2.6)
❷ Gear (EJECT)
Insert the gear (EJECT) beneath the gear (LD deceleration).
A
❶ Chassis (Mold B)
Insert the "A" portion to the "B" portion of the slider (selection).
Gear (LD deceleration)
"B" portion of the slider (selection)

SECTION 5
TEST MODE

PRECAUTIONS FOR USE OF TEST MODE

- Loading is performed regardless of the test mode operation. Therefore, be sure to check that the disc has stopped rotating before inserting or removing the disc.
  The disc does not stop rotating during continuous play, continuous record, and other modes even if you press the [MD⏏], so the disc will be ejected while it is rotating.
  Therefore, always press the [MENU/NO] button first, and then after the disc has stopped completely press the [MD⏏] button.

Modes and Button Operations in Which Recording Laser Emits Light

- Continuous recording mode (CREC MODE)
- Laser power check mode (LDPOWER CHECK)
- Laser power adjustment mode (LDPOWER ADJUST)
- Traverse (MO) check (EF MO CHECK)
- Traverse (MO) adjustment (EF MO ADJUST)
- When the [REC] button is pressed

SETTING THE TEST MODE

There are two ways of entering the test mode.

Method 1: Turn on the power and select the MD function. Press the three buttons simultaneously, i.e., the [ENTER/YES], [NAME EDIT], and [MD3] buttons to activate the test mode.
"[Check]" appears, indicating that the test mode is activated. You can select the four test groups sequentially in order by rotating [MULTI JOG] : ←→ Check ←→ Adjust ←→ Service ←→ Develop ←→ .....

Method 2: Turn on the power and select the MD function. Press the three buttons simultaneously, i.e., the [ENTER/YES], [NAME EDIT], and [MD5] buttons to activate the test mode.
"TEMP CHECK" appears, indicating that the test mode is activated. When the test mode is activated using this method, the contents of the "Check" group only that is described in the above Method 1 can be executed.

EXITING THE TEST MODE

Press the [REPEAT] button. If the disc has already been loaded, the disc is ejected to exit the test mode and return to the normal operation.

BASIC OPERATIONS OF THE TEST MODE

All operations of the test mode are performed using the [MULTI JOG] dial, [ENTER/YES] button, and [MENU/NO] button.
The functions of these buttons and dial are as follows.

Function Name	Function
AMS dial	Changes parameters and operating modes.
YES button	Proceeds to the next step. Finalizes input.
MENU/NO button	Returns to previous step. Stops operations.

How to Insert and Remove the Disc during the Test Mode

1. Slot 1 only can be used during the test mode.
2. Press the [MD⏏] button to load a disc.
3. Press the [MD⏏] button to eject a disc also.

SELECTING THE TEST MODE

There are 31 different types of test mode as shown below. First, select a desired test group by turning the MULTI JOG dial. When the desired test group is selected, press the ENTER/YES button to set it. After entering a group, select a desired test mode by turning the MULTI JOG dial. For the contents of the selected test mode, refer to the column "Group" in the following table.

All operations that are required during service and maintenance are included in group "S". Be careful not to enter any group other than "S" by mistake.

Display	No.	Contents	Mark	Group (*)
TEMP CHECK	01	Temperature compensation offset check		C S
LDPER CHECK	02	Laser power check		C S
EF MO CHECK	03	Traverse (MD) check		C S
EF CD CHECK	04	Traverse (CD) check		C S
FBIAS CHECK	05	Focus bias check		C S
Scurve CHECK	06	S-curve check	(×)	C
VERIFY MODE	07	Non-volatile memory check	(×)	C
DETRK CHECK	08	Detrack check	(×)	C
TEMP ADJUST	09	Temperature compensation offset adjustment		A S
LDPWR ADJUST	10	Laser power adjustment		A S
EF MO ADJUST	11	Traverse (MD) adjustment		A S
EF CD ADJUST	12	Traverse (CD) adjustment		A S
FBIAS ADJUST	13	Focus bias adjustment		A S
EEP MODE	14	Non-volatile memory control	(×) (!)	D
MANUAL CMD	15	Command transfer	(×)	D
SVDATA READ	16	Status display	(×)	D
ERR DP MODE	17	Error history display, clear		S
SLED MOVE	18	Sled check	(×)	D
ACCESS MODE	19	Access check	(×)	D
0920 CHECK	20	Outermost circumference check	(×)	D
HEAD ADJUST	21	Head position check	(×)	D
CPLAY2 MODE	22	Same function as CPLAY MODE	(×)	D
CREC2 MODE	23	Same function as CREC MODE	(×)	D
ADJ CLEAR	24	Initialization of adjustment value in non-volatile memory		A S
AG Set (MO)	25	Auto gain output level adjustment (MO)		A S
AG Set (CD)	26	Auto gain output level adjustment (CD)		A S
Iop Read	27	IOP data display		C S
Iop Write	28	IOP data write		A S
INFOMATION	29	Microprocessor version display		C S
CPLAY MODE	30	Continuous playback mode		C A S D
CREC MODE	31	Continuous recording mode		C A S D

(*) Group
C: Check A: Adjust
S: Service D: Develop

- If you enter a wrong mode by mistake, immediately exit the mode by pressing the MENU/NO button.
- The test groups with a (×) mark in the Mark column are not described in detail because these test groups are not used for servicing. If you enter one of these groups by mistake, immediately exit the mode by pressing the MENU/NO button.
  Be very careful not to enter any test groups with an exclamation mark (!) in the Mark column because the non-volatile memory can be written in these test groups and the HCD-MD555 will not work correctly.

Displays on Screen when the Test Mode is Selected

- Name of the selected test mode appears on the upper display.
- MD1- ␣␣ appears in the lower display.
  ↑
  Indicates the test mode number.

OPERATING THE CONTINUOUS PLAYBACK MODE

1. How to Enter the Continuous Playback Mode
   ① Insert a disc in slot 1. (Either a recordable disc or playback-only disc can be used.) Press the [MD⏏] button to load the disc.
   ② Turn the [MULTI JIG] dial until "CPLAY MODE" (30) appears on the display.
   ③ Press the [ENTER/YES] button and the display changes to "CPLAY MID".
   ④ When the disc is accessed, the display changes to "C=□□□□ AD=□□".
   Note: The number in the "□" area on the display indicates the error rate and "ADER".
2. How to Change the Playback Segment
   ① If you press the [ENTER/YES] button during continuous playback, the display changes as shown below and a different segment can be played back.

   ② When access to the segment is completed, the display changes to "C=□□□□ AD=□□".
   Note: The number in the "□" area on the display indicates the error rate and "ADER".

3. Ending the Continuous Playback Mode
   ① Press the [EDIT/NO] button. The display changes to "CPLAY MODE".
   ② To remove the disc, press the [MD⏏] button.
   Note: The playback start addresses for IN, MID, and OUT are as follows.
   IN : 40h cluster
   MID : 300h cluster
   OUT : 700h cluster

OPERATING THE CONTINUOUS RECORDING MODE (Use the following mode for the self record-and-playback check only)

1. How to Enter the Continuous Recording Mode
   ① Insert a disc that can be used for recording, in slot 1. Press the [MD⏏] button to load the disc.
   ② Turn the [MULTI JOG] dial until "CREC MODE" (31) appears on the display.
   ③ Press the [ENTER/YES] button and the display changes to "CREC MID".
   ④ When the disc is accessed, the display changes to "CREC (□□□□□" and **REC** turns on.
   Note: The number in the "□" area on the display indicates the address of the recording segment.
2. How to Change the Recording Segment
   ① If you press the [ENTER/YES] button during continuous recording, the display changes as shown below and a different segment can be recorded.

   ② When access to the segment is completed, the display changes to "CREC (□□□□□" and **REC** turns on.
   Note: The number in the "□" area on the display indicates the address of the recording segment.

3. Ending the Continuous Recording Mode
   ① Press the [MENU/NO] button. The display changes to "CREC MODE" and **REC** is turned off.
   ② To remove the disc, press the [MD⏏] button.
   Note 1: The recording start addresses for IN, MID, and OUT are as follows.
   IN:40h cluster
   MID: 300h cluster
   OUT: 700h cluster
   Note 2: The [MENU/NO] button remains valid at all times and can be used to stop recording at any time.
   Note 3: Do not perform continuous recording for longer than 5 minutes.
   Note 4: Be careful not to give vibration during continuous recording.

Non-volatile Memory Mode (EEP Mode)

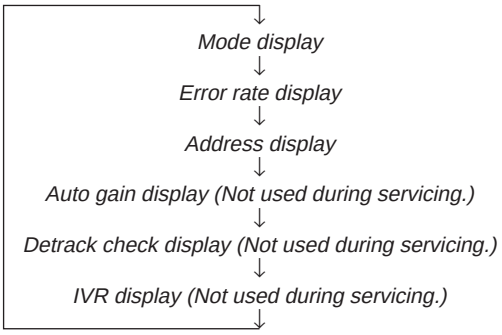
This mode is used to read and write the contents of the non-volatile memory.
This mode is not used during servicing. If you enter this mode by mistake, press the [MENU/NO] button immediately to exit it.

FUNCTIONS OF OTHER BUTTONS

Function Name	Contents
▷II	When pressed in the STOP state, continuous playback mode is entered. When pressed during continuous playback, it turns on and off the tracking servo.
■	Stops the continuous playback operation and continuous recording operation.
▶▶	While this button is kept pressed, the sled moves to the outer circumference.
◀◀	While this button is kept pressed, the sled moves to the inner circumference.
CLEAR	Toggles between pit and groove.
PLAY MODE	Switches the spindle servo modes. (CLV S ↔ CLV A).
LOWER DISPLAY	Changes the display contents.
MD⏏	Ejects a disc.
PEREAT	Exits the test mode.

DISPLAY IN THE TEST MODE

Each time the [LOWER DISPLAY] button pressed, the display changes in the following order.


Mode display
Error rate display
Address display
Auto gain display (Not used during servicing.)
Detrack check display (Not used during servicing.)
IVR display (Not used during servicing.)

MODE display

Displays “TEMP ADJUST”, “CPLAY MODE”, etc.

Error rate display

Error rates are displayed as follows.

C=□□□□AD=□□

C =: Indicates the C1 error

AD =: Indicates ADER.

Address display

Addresses are displayed as follows. (MD: recordable disc, CD: playback only disc)
If the [CLEAR] button is pressed in this state, the display toggles between the groove display and the pit display.

h = □□□□s = □□□□ (MD pit and CD)

h = □□□□a = □□□□ (MD groove)

h =: Indicates header address.

s =: Indicates SUBQ address.

a =: Indicates ADIP address.

Note: The display “_” appears when the servo cannot be locked in and the address cannot be read.

Auto gain display (This display is not used during servicing.)

The auto gain display is as follows.

AG = □□ / □□ [□□

Detrack check display (This display is not used during servicing.)

The detrack check display is as follows.

ADR = □□□□□□□

IVR display (This display is not used during servicing.)

The IVR display is as follows.

[□□] [□□] [□□

MEANING OF OTHER DISPLAYS

Display	Contents	
	When turned on	When turned off
▷ (LED: green)	During continuous playback (CLV:ON)	STOP (CLV: OFF)
❚❚ (LED: amber)	Tracking servo OFF	Tracking servo ON
REC	Recording mode ON	Recording mode OFF
SYNC	CLV low speed mode	CLV normal mode
L-SYNC	ABCD adjustment completed	
OVER	Tracking offset cancel ON	Tracking offset cancel OFF
REPEAT	Tracking auto gain successful	
(REPEAT) 1	Focus auto gain successful	
TRACK	Pit mode	Groove mode
DISC	High reflection	Low reflection
SHUFFLE	CLV-S	CLV-A
MONO	CLV LOCK	CLV UNLOCK
IT	LIMIT IN	

CONTINUOUS RECORDING AGING MODE

Repeat the five-second recording continuously over the entire recording area of the five discs.

1. How to Enter the Continuos Recording Mode
   ① Insert all of the five recordable discs on which data is allowed to be recorded.
   ② Press all of the three [ENTER/YES], [NAME EDIT], and [MD4] button at the same time.
2. Indications on Display
   The normal display appears while the TOC writing is in progress. However, number of cycles and disc number are displayed while exchanging the discs.
   Example : 00035 D-2:*
   It indicates that that 35 cycles have ended and loading of the disc 2 is in progress.
3. Error
   When error occurs, aging stops and the error content, number of cycles and the disc numbers are displayed alternately.

Error display	Error contents
NG TOCWRITE	Number of cycles and number of musics on TOC do not agree.
NG CHUCKING	Failed to chuck and resulted in time out (20 seconds)
NG RELEASE	Failed to eject and resulted in time out (20 seconds)
MECHA ERR	Error occurs even after retrying twice.
NG RECPAUSE	REC PAUSE is not executed. (Head does not move down, etc.)
NG REC 5s	Does not start recording.
NG BLANK	ALL ERASE is attempted but resulted in fail.

Errors can be cleared by pressing the [FR] button, and the aging restarts.

4. Ending of aging
   Aging ends by pressing the [MENU/NO] button.

TEST MODE DISPLAY

1. How to Enter the Test Mode
   While pressing the [ENTER/YES] and [REC] buttons, press the POWER button twice (i.e., turn off the main power and back on again.)
2. All Displays On Mode and Key Check Mode
   ① After the message “FL ALL On Key” appears, all displays are turned on.
   ② Every pressing of keys turns off the display one after another. When keys are pressed, all displays are turned off and the message “Push YES” appears.
   ③ When the [ENTER/YES] is pressed, the test mode advances to the next step.
3. FL 5 × 7 Segment Check Mode
   ① The 5 × 7 segment display changes to the mesh display.
   ② When the [ENTER/YES] button is pressed, the test mode advances to the next step.
4. JOG & LED Check Mode
   ① Whenever the JOG dial is rotated, all LEDs repeat turning on and off.
   ② When the [ENTER/YES] button is pressed, the message “Check End!” appears.
5. Exiting the Display Test Mode
   When the [ENTER/YES] button is pressed, the test mode is terminated to return to the normal mode.
   The display test mode can be resumed again by pressing the [MENU/NO] button.

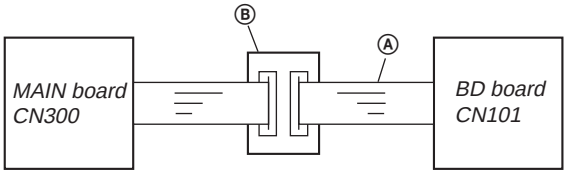
SECTION 6
ELECTRICAL ADJUSTMENT

List of Service Tools

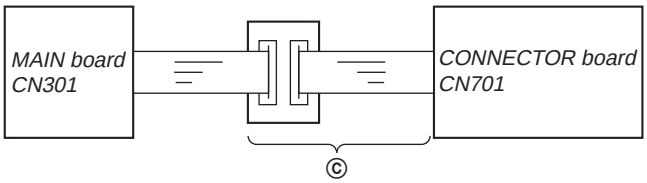
- Oscilloscope
- Digital voltmeter
- Thermometer
- Laser power meter LPM-8001
  (Part No. J-2501-046-A)

or

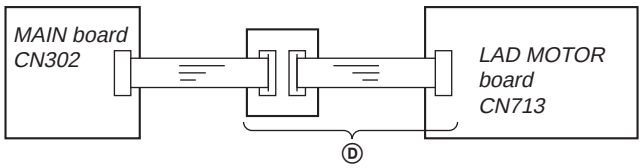
- MD laser power meter 8010S
  (Part No. J-2501-145-A) (Note)
- BD board waveform check jig
  (Part No. J-2501-149-A)
- Check disc (MD) TDYS-1
  (Part No. 4-963-646-01)
- Test disc (MDW-74/AU-1)
  (Part No. 8-892-341-41)
- Test CD YEDS-18
  (Part No. 3-702-101-01)
- Extension cable (19-conductor, 1.25 mm) Ⓐ
  (Part No. J-2501-011-B)
- Relay board (19-conductor, 1.25 mm) Ⓑ
  (Part No. J-2501-168-A)



- Extension cable (17-conductor, 1.25 mm) Ⓒ
  (Part No. J-2501-167-A)



- Extension cable (4-conductor) Ⓓ
  (Part No. J-2501-165-A)



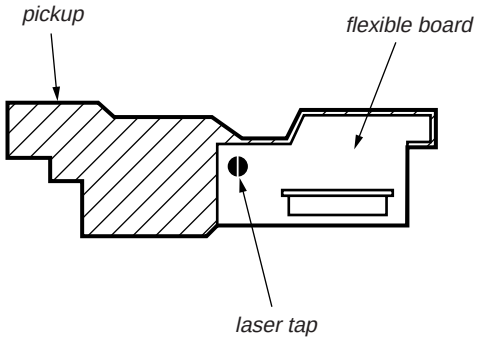
MD SECTION

Precautions for Checking Laser Diode Emission

To check the emission of the laser diode during adjustments, never view directly from the top as this may lose your eye-sight.

Precautions for Use of optical pick-up (KMS-260A)

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when using it. Before disconnecting the connector, desolder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



Precautions for Adjustments

1) When any of the following parts is replaced, perform the adjustments and checks to which a circle (O) is put in the table below, in the following order.

	Optical Pickup	BD Board		
		IC171	D101	IC101
1. Initial setting of adjustment value	O	O	×	O
2. Saving the IOP information (the value that is indicated on the pickup)	O	O	×	×
3. Temperature compensation offset adjustment	×	O	O	×
4. Laser power adjustment	O	O	×	O
5. Traverse adjustment	O	O	×	O
6. Focus bias adjustment	O	O	×	O
7. Error rate adjustment	O	O	×	O
8. Auto gain output level adjustment	O	O	×	O

2) Perform the following adjustments in the test mode.
   When the adjustments are completed, exit the test mode.
   Perform the following adjustments and checks using the "Grope S" of the test mode.
3) Perform the necessary adjustments in the order shown.
4) When observing several signals on an oscilloscope, make sure that VC and ground are not shorted inside an oscilloscope. (VC and ground will be short-circuited.)
5) When the above described "BD board waveform check jig" (Part No. J-2501-149-A) is used to observe waveforms, waveforms can be observed without soldering.

6) Use the jig disc that is free from finger print because it can adversely affect the adjustment result.

Note:
Using the new MD laser power meter 8010S (J-2501-145-A) instead of conventional laser power meter is convenient for check laser power and adjustment during the electrical adjustment. The procedure to set the laser power meter sensor to the objective lens of pickup is significantly improved.

Creating Continuously Recorded Disc

- This disc is used in focus bias adjustment and error rate check. The following describes how to create a continuous recording disc.

1. Insert an MO disc (blank disc) commercially available.
2. Rotate the [MULTI JOG] knob and display "CREC MODE" (31).
3. Press the [ENTER/YES] button to display "CREC MID". "CREC (0300)" is displayed for a moment and recording starts.
4. Complete recording within 5 minutes.
5. Press the [MENU/NO] button and stop recording .
6. Press the [MD⏏] button and remove the MO disc.

The above procedure shows how to create a continuous recording data for the focus bias adjustment and error rate check.

Note :
• Be careful not to apply vibration during continuous recording.

Check Before Repairing

This is an approximate check to locate the source of trouble before starting to replace the parts. Refer to "Parts Replacement- Check Before Adjustment" of Service Note (page 11) for more detailed.

Temperature Compensation Offset Adjustment

Adjust both the room temperature and the internal temperature of this set to 22 to 28°C before starting the adjustment.

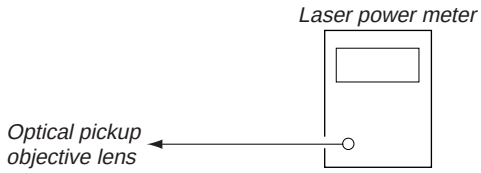
Adjusting Method :

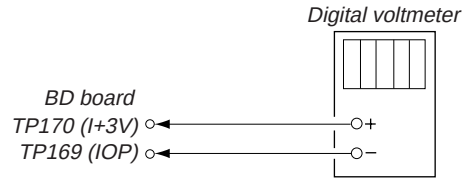
1. Rotate the [MULTI JOG] knob and let the display "TEMP CHECK".
2. Press the [ENTER/YES] button.
3. When "T = @@(##) (OK" appears, the temperature check is normal. If "T = @@(##) (NG" is displayed, the temperature check is not good. (@@ is the present value of this set. ## is the value that is written in the non-volatile memory.)

Laser Power Check

Before starting the laser power check :
Check the IOP value of the optical pickup before starting the laser power check. (Refer to section "Recording and Display of IOP Information" (Page 47).)

Connection :

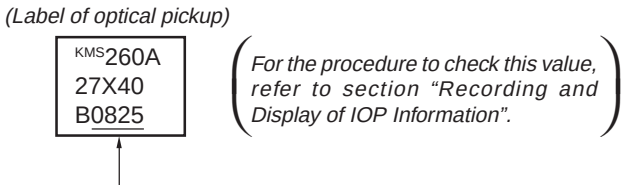




Adjusting Method :

1. Set the laser power meter on top of the objective lens of the optical pickup. (When it cannot be set properly, press the [◀◀] button or [▶▶] button to move the optical pickup so that the laser power meter can be set.)
   Connect the digital voltmeter to TP170 (I + 3 V) and TP169 (IOP).
2. Rotate the [MULTI JOG] knob and let the display "LDPWR CHECK" (C: 2) appear.
3. Press the [ENTER/YES] button once and let the display "LD 0.9 mW $ □□" appear.
   Check that the laser power meter reading is in the range of 0.84 to 0.92 mW.
4. Repress the [ENTER/YES] button again and let the display "LD 7.0mW $ □□" appear.
   Check that the laser power meter and digital voltmeter readings satisfy the specified value.

Specification :
Laser power meter reading : 7.0 ± 0.2 mW
Digital voltmeter reading : The value that is indicated on the label of the optical pickup ±10 %

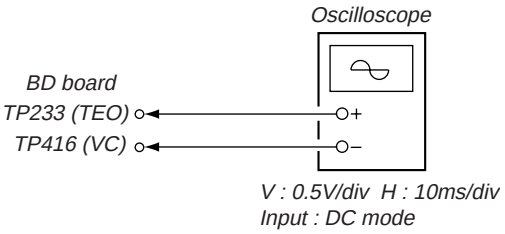

(Label of optical pickup)
KMS260A
27X40
B0825
For the procedure to check this value, refer to section "Recording and Display of IOP Information".
Iop = 82.5 mA in this example
Iop (mA) = Digital voltmeter reading (mV) / 1(Ω)

5. Press the [MENU/NO] button and let display "LDPWR CHECK" appear that stops laser emission.
   (The [MENU/NO] button can be accepted at all times to stop the laser emission.)

Note 1: Every time when the [ENTER/YES] button is pressed after step 4, the display changes in the order starting from "LD 0.7m W$ □□", "LD 6.2m W$ □□", "LD WPホセイ$ □□". This is just a display and any operations are not necessary.

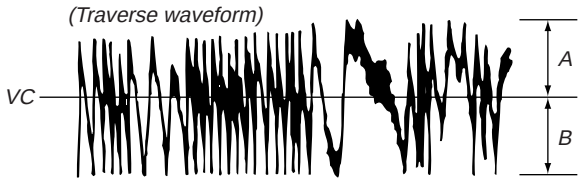
Traverse Check

Connection :



Adjusting Method :

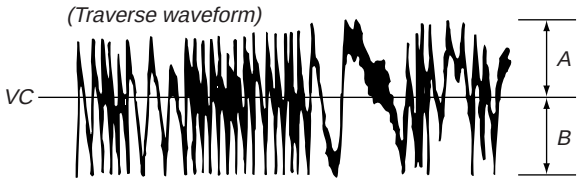
1. Connect an oscilloscope to TP233 (TEO) and TP416 (VC) of the BD board.
2. Insert an MO disc (any MO disc available on the market). (Refer to Note 1.)
3. Press the [▶▶] button and move the optical pickup toward outer circumference of the pit area.
4. Rotate the [MULTI JOG] knob and let the display "EF MO CHECK" (03) appear.
5. Press the [ENTER/YES] button and let the display "EFB = ⬚⬚ MO-R" appear.
   (The read laser power, the focus servo is turned ON the tracking servo is turned OFF and the spindle (S) servo is turned ON.)
6. Observe waveform on an oscilloscope and confirm that waveform on an oscilloscope satisfies the specified value. Do not rotate the [MULTI JOG] knob at this time.
   (Read power traverse check)



Specified value : Offset value 10% or less

$$\text{Offset value (\%)} = \frac{|A-B|}{2(A+B)} \times 100$$

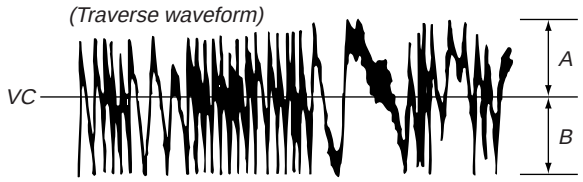
7. Press the [ENTER/YES] button and let the display "EFB = ⬚⬚ MO-W" appear.
8. Observe waveform on an oscilloscope to confirm that waveform on an oscilloscope satisfies the specified value. Do not rotate the [MULTI JOG] knob at this time.
   (Write power traverse check)



Specified value : Offset value 10% or less

$$\text{Offset value (\%)} = \frac{|A-B|}{2(A+B)} \times 100$$

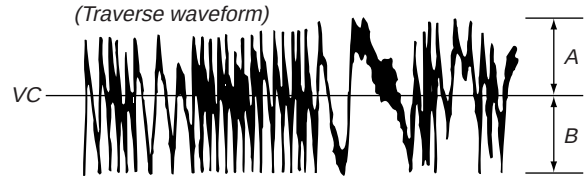
9. Press the [ENTER/YES] button and let the display "EFB = ⬚⬚ MO-P" appear.
   The optical pickup moves toward inner circumference of the pit area. and the servo locks in.
10. Observe waveform on an oscilloscope to confirm that waveform on an oscilloscope satisfies the specified value. Do not rotate the [MULTI JOG] knob at this time.



Specified value : Offset value 10% or less

$$\text{Offset value (\%)} = \frac{|A-B|}{2(A+B)} \times 100$$

11. Press the [ENTER/YES] button and let the display "EF MO CHECK" appear. The disc stops rotating automatically.
12. Press the [MD⏏] button and remove the MO disc.
13. Insert the check disc (MD) TDYS-1.
14. Rotate the [MULTI JOG] knob and let the display "EF CD CHECK" (04) appear.
15. Press the [ENTER/YES] button and let the display "EFB = ⬚⬚ CD" appear. The servo locks in automatically.
16. Observe waveform on an oscilloscope to confirm that waveform on an oscilloscope satisfies the specified value. Do not rotate the [MULTI JOG] knob at this time.



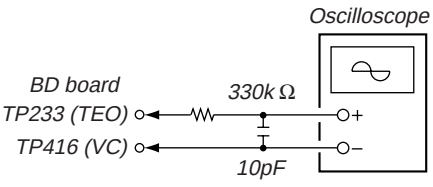
Specified value : Offset value 10% or less

$$\text{Offset value (\%)} = \frac{|A-B|}{2(A+B)} \times 100$$

17. Press the [ENTER/YES] button and let the display "EF CD CHECK" appear.
18. Press the [MD⏏] button and remove the check disk (MD) TDYS-1.

Note 1 : If any recorded disc is used for this check, all the data will be erased during writing into MO.

Note 2 : If the traverse waveform is difficult to see, connect an oscilloscope as shown in the following figure so that it can be seen more clearly.



Focus Bias Check

Change the focus bias and check the focus tolerance amount.

Checking Method :

1. Load a test disc (MDW-74/AU-1).
2. Rotate the [MULTI JOG] knob and display “CPLAY MODE” (S:30).
3. Press the [ENTER/YES] button twice and display “CPLAY MID”.
4. Press the [MENU/NO] button when “C =□□□□AD =□□” is displayed.
5. Rotate the [MULTI JOG] knob and display “FBIAS CHECK”(05).
6. Press the [ENTER/YES] button and display “ □□□□/□□ c =□□”.
   The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
   Check that the C1 error is below 220 and ADER is 2.
7. Press the [ENTER/YES] button and display “ □□□□/□□ b =□□”.
   Check that the C1 error is not below 220 and ADER is 2.
8. Press the [ENTER/YES] button and display “□□□□/□□ a =□□”.
   Check that the C1 error is not below 220 and ADER is 2.
9. Press the [MENU/NO] button, next press the [MD⏏] button, and remove the disc.

C PLAY Check
MO Error Rate Check

Checking Method :

1. Load a test disc (MDW-74/AU-1).
2. Rotate the [MULTI JOG] knob and display “CPLAY MODE”(S:30).
3. Press the [ENTER/YES] button twice and display “CPLAY MID”.
4. “C =□□□□AD =□□” is displayed.
5. Check that C1 error rate is below 80 and ADER is 2.
6. Press the [MENU/NO] button, stop playback, press the [MD⏏] button, and remove the test disc.

CD Error Rate Check

Checking Method :

1. Load a test disc (MD) TDYS-1.
2. Rotate the [MULTI JOG] knob and display “CPLAY MODE” (S:30).
3. Press the [ENTER/YES] button twice and display “CPLAY MID”.
4. “C =□□□□AD =□□” is displayed.
5. Check that the C1 error rate is below 50.
6. Press the [MENU/NO] button, stop playback, press the [MD⏏] button, and remove the check disc (MD).

Self-Record/Playback Check

The set that is being repaired, creates a continuous record/playback disc by itself and checks the error rate.

Checking Method :

1. Insert a disc (blank disc) to which data is allowed to be recorded.
2. Rotate the [MULTI JOG] knob and let the display “CREC MID” (S: 31) appear.
3. Press the [ENTER/YES] button and let the display “CREC MID” appear.
4. As recording is started, the message **REC** appears and then the message changes to “CREC” (@@@@” (@@@@ means address) indicating that recording is started.
5. About one minute later, press the [MENU/NO] button to stop the continuos recording.
6. Rotate the [MULTI JOG] knob and let the display “CPLAY MID” (S: 30) appear.
7. Press the [ENTER/YES] button and let the display “CPLAY MID” appear.
8. “C = □□□□ AD = □□” appear.
9. Check that C1 error is 80 or less and AD error is 2 or less.
10. Press the [MENU/NO] button to stop playing back. Press the [MD⏏] button and remove the disc.

Initial Setting of Adjustment Value

Note :

This is the mode which sets and returns the adjustment result value that is recorded in the non-volatile memory, to the initial setting value. However, the resultant value of the temperature compensation offset adjustment is not set or not returned to the initial setting value. If the initial setting is executed, all adjustment steps must be performed again from the beginning excluding temperature compensation offset adjustment.

For this initial setting, refer to “Precaution for Adjustment” (Page 43). Perform the initial setting before starting adjustments as necessitated.

Setting Method :

1. Rotate the [MULTI JOG] knob and let the display “ADJ CLEAR” (24)) appear.
2. When the [ENTER/YES] button is pressed, “Complete!” appears for a moment and the initial setting is executed. Then “ADJ CLEAR” appears.

Recording and Display of IOP Information

The IOP data can be recorded in the non-volatile memory. The two types of IOP data can be recorded in the non-volatile memory. One is the unique IOP value of the optical pickup that is indicated on the label of the optical pickup. The other is the IOP value after completion of adjustment. When you want to check the unique IOP value of the optical pickup, you need not to turn around the set to look at the label since the IOP information is recorded in the non-volatile memory.

Recording Method :

1. Rotate [MULTI JOG] and let the display "[Service]" appear. Press the [ENTER/YES] button.
2. Rotate the [MULTI JOG] knob and let the display "Iop Write" (28) appear. Press the [ENTER/YES] button.
3. The display changes to "Ref=@@@@" (@ is an arbitrary number). The numbers that can be modified, flash.
4. Enter the IOP value that is indicated on the label of the optical pickup.
   To select number: Rotate [MULTI JOG].
   To select the digit : Press the [MD WALKMAN SYNC].
5. Press the [ENTER/YES] button and the display changes to "Measu=@@@.@" (@ is an arbitrary number).
6. The resultant value of adjustment is saved in the non-volatile memory by simply pressing the [ENTER/YES] button in this step 6. Therefore, press the [ENTER/YES] button without changing the value on display.
7. The message "Complete!" appears for a moment. The values are saved in the non-volatile memory. The display changes to "lop Write".

How to Display the IOP Values:

1. Rotate [MULTI JOG] and let the display "lop Read" (27) appear.
2. "@@.@/##.#" appears and the saved contents are displayed as follows:
   @@.@ : Iop value that is indicated on the label of the optical pickup
   ##.# : Iop value that is the resultant value of adjustment
3. Press the [MENU/NO] button to end the display and to show the message "Iop Read".

Temperature Compensation Offset Adjustment

Save the temperature data at that time in the non-volatile memory as 25 ˚C reference data.

Note :

1. Usually, do not perform this adjustment.
2. Perform this adjustment in an ambient temperature of 22 ˚C to 28 ˚C. Perform it immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambient temperature.

Adjusting Method :

1. Rotate the [MULTI JOG] knob and display "TEMP ADJUST".
2. Press the [ENTER/YES] button and select the "TEMP ADJUST" mode.
3. "TEMP = □□" and the current temperature data will be displayed.
4. To save the data, press the [ENTER/YES] button.
   When not saving the data, press the [MENU/NO] button.
5. When the [ENTER/YES] button is pressed, "TEMP = □□ SAV" will be displayed for some time, followed by "TEMP ADJUST".
   When the [MENU/NO] button is pressed, "TEMP ADJUST" will be displayed.

Specifications :

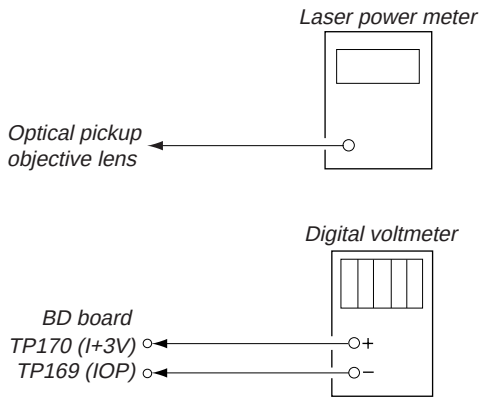
The "TEMP = □□" should be within "E0 - EF", "F0 - FF", "00 - 0F", "10 - 1F" and "20 - 2F".

Laser Power Adjustment

Before starting the adjustment:

Check the IOP value of the optical pickup beforehand. (Refer to section " Recording and Display of IOP Information".)

Connection :



Adjusting Method :

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the [◀◀] button or [▶▶] button and move the optical pick-up.)
   Connect the digital volt meter to TP (IOP) and TP (I+5V).
2. Rotate the [MULTI JOG] knob and display "LDPWR ADJUST".
   (Laser power : For adjustment)
3. Press the [ENTER/YES] button once and let the display "LD 0.9 mW $ □□" appear.
4. Rotate [MULTI JOG] until the laser power meter reading is in the range of 0.85 to 0.91 mW. Select the 10 mW range of the laser power meter and press the [ENTER/YES] button to save the resultant value of adjustment in the non-volatile memory. (The message "LD SAVE $□□" appears for a moment.)

5. Then the message “LD 7.0m W$ □□” appears.
6. Rotate [MULTI JOG] so that the laser power meter reading is in the range of 6.9 to 7.1 mW. Press the [ENTER/YES] button to save the resultant value of adjustment in the non-volatile memory. (The message “LD SAVE $□□” appears for a moment.)

Note: Do not continue emission of 7.0 mW for 15 seconds or longer.

7. Rotate [MULTI JOG] and let the display “LDPWR CHECK” (02) appear.
8. Press the [ENTER/YES] button once and let the display “LD 0.9 mW $ □□” appear.
   Check that the laser power meter reading is in the range of 0.85 to 0.91 mW.
9. Press the [ENTER/YES] button once and let the display “LD 7.0mW $ □□” appear.
   Check that the laser power meter and digital voltmeter readings satisfy the specified value. Take note of the digital voltmeter reading.

Specification :

Laser power meter reading : 7.0 ± 0.1 mW
Digital voltmeter reading : The value that is indicated on the label of the optical pickup ± 10 %

(Label of optical pickup)

KMS260A
27X40
B0825

For the procedure to check this value, refer to section “Recording and Display of IOP Information”.

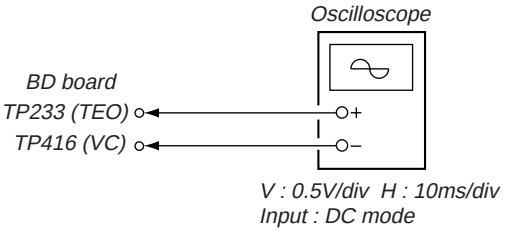
Iop = 82.5 mA in this example
Iop (mA) = Digital voltmeter reading (mV) / 1(Ω)

10. Press the [MENU/NO] button and let the display “LDPWR CHECK” appear to stop laser emission.
    (The [MENU/NO] button can be accepted at all times to stop the laser emission.)
11. Rotate [MULTI JOG] and let the display “Iop Write” appear.
12. Press the [ENTER/YES] button. When the display changes to “Ref=@@@@” (@ is an arbitrary number), press the [ENTER/YES] button and let the message “Measu=@@@.@”. (@ is an arbitrary number) appear.
13. The numbers that can be modified, flash. Enter the IOP value that is taken note of in step 9.
    To select number: Rotate [MULTI JOG].
    To select the digit : Press the [MD WALKMAN SYNC].
14. When the [ENTER/YES] button is pressed, the message “Complete!” appears for a moment. The values are saved in the non-volatile memory. The display changes to “lop Write”.

Note 1: Every time when the [ENTER/YES] button is pressed upon completion of step 9, the display changes in the order starting from “LD 0.7m W$ □□”, “LD 6.2m W$ □□”, “LD WPホセイ$ □□” and “LDWP correction $ □□”. This is just a display and any operations are not necessary.

Traverse Adjustment

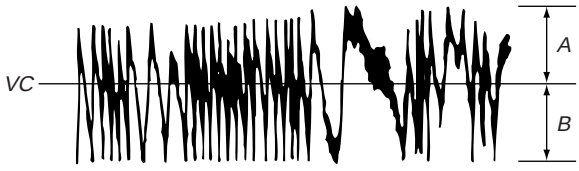
Connection :



Adjusting method :

1. Connect an oscilloscope to TP233 (TEO) and TP416 (VC) of the BD board.
2. Insert an MO disc (any MO disc available on the market). (Refer to Note 1.)
3. Press the [▶▶] button and move the optical pickup toward outer circumference of the pit area.
4. Rotate [MULTI JOG] and let the display “EF MO ADJUST” (11) appear.
5. Press the [ENTER/YES] button and let the display “EFB = □□ MO-R” appear.
   (The read laser power is turned on, the focus servo is turned ON, the tracking servo is turned OFF and the spindle (S) servo is turned ON.)
6. Rotate the [MULTI JOG] until the waveform on an oscilloscope satisfies the specified value. (When the [MULTI JOG] is rotated, the numbers □□ of “EFB = □□” changes and the waveform also changes.) The waveform changes at the step of approx. 2 % in this adjustment. Adjust the waveform until the waveform becomes as closest as possible to the satisfied value.
   (Read power traverse adjustment)

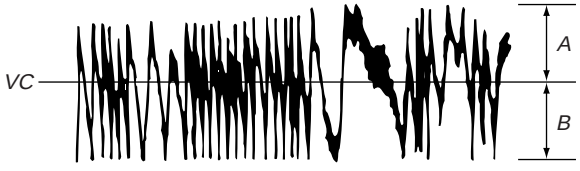
(Traverse Waveform)



Specification : A = B

7. Press the [ENTER/YES] button to save the resultant data of adjustment in the non-volatile memory. (“EFB = □□ SAVE” is displayed for a moment. Then “EFB = □□ MO-W” is displayed.)
8. Rotate the [MULTI JOG] until the waveform on an oscilloscope satisfies the specified value. (When the [MULTI JOG] is rotated, the numbers □□ of “EFB = □□” changes and the waveform also changes.) The waveform changes at the step of approx. 2 % in this adjustment. Adjust the waveform until the waveform becomes as closest as possible to the satisfied value.
   (Write power traverse adjustment)

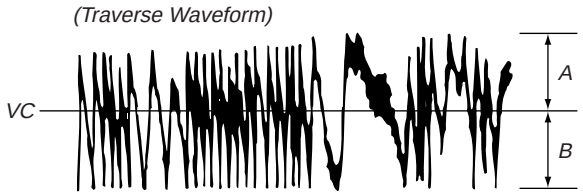
(Traverse Waveform)



Specification : A = B

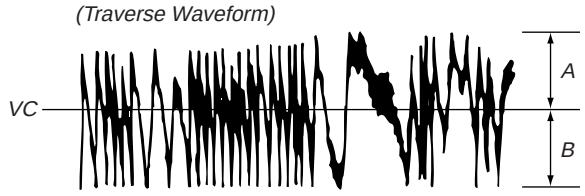
9. Press the [ENTER/YES] button to save the resultant data of adjustment in the non-volatile memory. (“EFB = □□ SAVE” is displayed for a moment.)

10. "EFB = □□ MO-P" appears.
    The optical pickup moves toward inner circumference of the pit area. and the servo locks in.
11. Rotate [MULTI JOG]. The waveform changes at the step of approx. 2 % in this adjustment. Adjust the waveform until the waveform becomes as closest as possible to the satisfied value.



Specification : A = B

12. Press the [ENTER/YES] button to save the resultant data of adjustment in the non-volatile memory. ("EFB = □□SAVE" is displayed for a moment.)
    Then "EF MO ADJUST" is displayed. The disc stops rotating automatically.
13. Press the [MO⏏] button and remove the MO disc.
14. Insert the check disc (MD) TDYS-1.
15. Rotate [MULTI JOG] and let the display "EF CD ADJUST" (12) appear.
16. Press the [ENTER/YES] button and let the display "EFB = □□ CD" appear. The servo locks in automatically.
17. Rotate [MULTI JOG]. The waveform changes at the step of approx. 2 % in this adjustment. Adjust the waveform until the waveform becomes as closest as possible to the satisfied value.

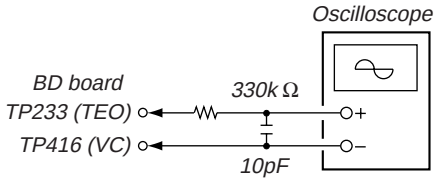


Specification : A = B

18. Press the [ENTER/YES] button, display "EFB = □□ SAVE" for a moment and save the adjustment results in the non-volatile memory.
    Next "EF CD ADJUST" is displayed.
19. Press the [MD⏏] button and remove the check disc (MD) TDYS-1.

Note 1 : Data will be erased during MO reading if a recorded disc is used in this adjustment.

Note 2 : If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



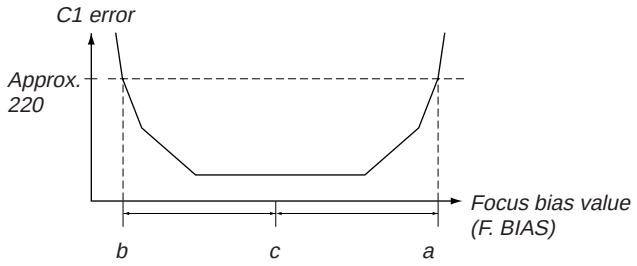
Focus Bias Adjustment

Adjusting Method :

1. Load a test disc (MDW-74/AU-1).
2. Rotate the [MULTI JOG] knob and display "CPLAY MODE "(29).
3. Press the [ENTER/YES] button twice and display "CPLAY MID".
4. Press the [MENU/NO] button when "C =□□□□AD =□□" is displayed.
5. Rotate the [MULTI JOG] knob and display "FBIAS ADJUST" (13).
6. Press the [ENTER/YES] button and display "□□□□/□□ a =□□".
   The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [a =] indicate the focus bias value.
7. Rotate the [MULTI JOG] knob in the clockwise direction and find the focus bias value at which the C1 error rate becomes 220. (Refer to Note 2.)
8. Press the [ENTER/YES] button and display "□□□□/□□ b =□□".
9. Rotate the [MULTI JOG] knob in the counterclockwise direction and find the focus bias value at which the C1 error rate becomes 220.
10. Press the [ENTER/YES] button and display "□□□□/□□ c =□□".
11. Check that the C1 error rate is below 50 and ADER is 00. Then press the [ENTER/YES] button.
12. If the "(□□" in " □□-□□-□□ (□□" is above 20, press the YES button.
    If below 20, press the [MENU/NO] button and repeat the adjustment from step 2 again.
13. Press the [MD⏏] button to remove the test disc.

Note 1 : The relation between the C1 error and focus bias is as shown in the following figure. Find points a and b in the following figure using the above adjustment. The focal point position C is automatically calculated from points a and b.

Note 2 : As the C1 error rate changes, perform the adjustment using the average value.



Error Rate Check

CD Error Rate Check

Checking Method :

1. Load a check disc (MD) TDYS-1.
2. Rotate the [MULTI JOG] knob and display "CPLAY MODE" (30).
3. Press the [ENTER/YES] button twice and display "CPLAY MID".
4. "C =□□□□AD =□□" is displayed.
5. Check that the C1 error rate is below 20.
6. Press the [MENU/NO] button, stop playback, press the [MD⏏] button, and remove the check disc (MD).

MO Error Rate Check

Checking Method :

1. Load a test disc (MDW-74/AU-1).
2. Rotate the [MULTI JOG] knob and display "CPLAY MODE" (30).
3. Press the [ENTER/YES] button twice and display "CPLAY MID".
4. "C =□□□□AD =□□" is displayed.
5. If the C1 error rate is below 50, check that ADER is 2.
6. Press the [MENU/NO] button, stop playback, press the [MD⏏] button, and remove the test disc.

Focus Bias Check

Change the focus bias and check the focus tolerance amount.

Checking Method :

1. Load a test disc (MDW-74/AU-1).
2. Rotate the [MULTI JOG] knob and display "CPLAY MODE" (30).
3. Press the [ENTER/YES] button twice and display "CPLAY MID".
4. Press the [MENU/NO] button when "C =□□□□AD =□□" is displayed.
5. Rotate the [MULTI JOG] knob and display "FBIAS CHECK" (05).
6. Press the [ENTER/YES] button and display " □□□□/□□ c =□□".
   The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
   Check that the C1 error is below 50 and ADER is 2.
7. Press the [ENTER/YES] button and display " □□□□/□□ b =□□".
   Check that the C1 error is not below 220 and ADER is 2.
8. Press the [ENTER/YES] button and display "□□□□/□□ a =□□".
   Check that the C1 error is below 220 and ADER is 2.
9. Press the [MENU/NO] button, next press the [MD⏏] button, and remove the continuously recorded disc.

Note 1 : If the C1 error and ADER are above 00 at points a (step 8.) or b (step 7.), the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

Auto Gain Control Output Level Adjustment

Be sure to perform this adjustment when the pickup is replaced. If the adjustment ends in the message "Adjust NG!", it is suspected that the optical pickup is defective or the servo system circuit is defective.

CD Auto Gain Control Output Level Adjustment

Adjusting Method :

1. Insert the check disc (MD) TDYS-1.
2. Rotate [MULTI JOG] and let the display "AG Set (CD)" (26) appear.
3. When the [ENTER/YES] button is pressed, the adjustment is performed automatically and result of the adjustment is saved in the non-volatile memory. After the adjustment result is saved in the non-volatile memory, "Complete!" appears and then "AG Set (CD)" is displayed indicating that the adjustment is complete.
4. Press the [MD⏏] button and remove the MO disc.

MO Auto Gain Control Output Level Adjustment

Adjusting Method :

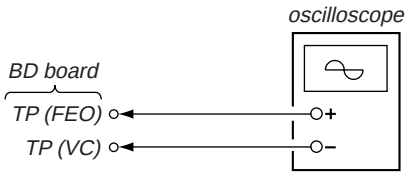
1. Insert the recording reference disc (MDW-74/AU-1).
2. Rotate [MULTI JOG] and let the display "AG Set (MO)" (25) appear.
3. When the [ENTER/YES] button is pressed, the adjustment is performed automatically and result of the adjustment is saved in the non-volatile memory. After the adjustment result is saved in the non-volatile memory, "Complete!" appears and then "AG Set (MO)" is displayed indicating that the adjustment is complete.
4. Press the [MD⏏] button and remove the MO disc.

CD SECTION

Note:

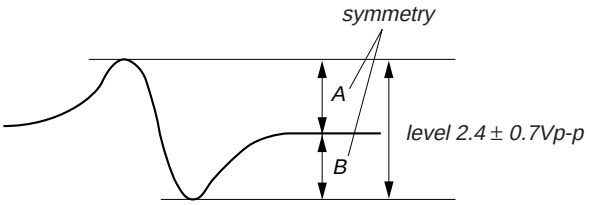
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check



Procedure :

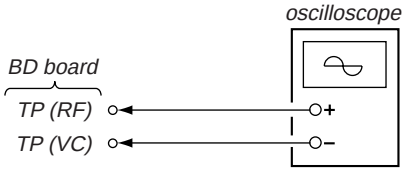
1. Connect oscilloscope to test point TP (FEO) on SERVO board.
2. Connect between test point TP (FEI) and TP (VC) by lead wire.
3. Connect TP (AGCON) to ground by lead wire.
4. Turn ⏻ (power) switch on.
5. Put disc (YEDS-18) in and turn ⏻ (power) switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
6. Check the symmetry of the oscilloscope waveform (S-curve) and the level (p-p value).



7. After check, remove the lead wire TP (FOK) connected in step 2.

Note : Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7. (Take sweep time as long as possible and light up the brightness to obtain best waveform.)

RF Level Check

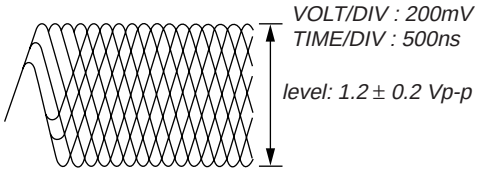


Procedure :

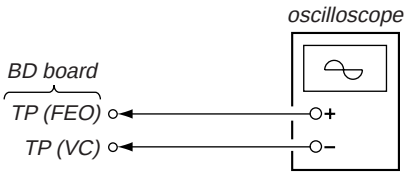
1. Connect oscilloscope to test point TP (RF).
2. Turn ⏻ (power) switch on.
3. Put disc (YEDS-18) in to play.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note: A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

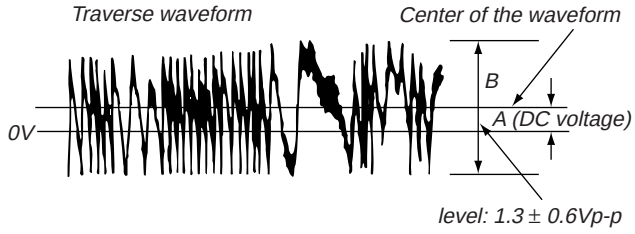
RF signal waveform



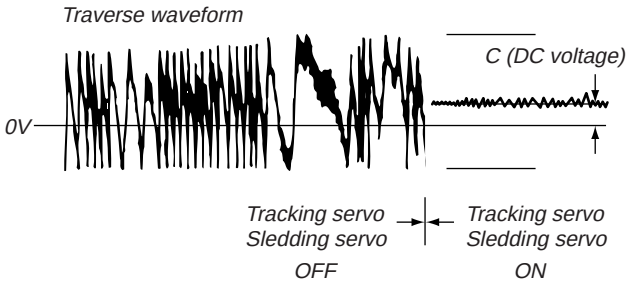
E-F Balance (Traverse) Check



1. Solder the lead wire to TP308 (ADJ) on MAIN board.
2. Connect oscilloscope to test point TP (TE) on SERVO board.
3. Turn the ⏻ (power) switch on to set the ADJ mode.
4. Set the function switch to the CD position.
5. Connect the lead wire to ground, that is connected in step 1.
6. Insert the disc (YEDS-18) and start playing back.
7. Press the DISPLAY button. (Tracking servo and sled servo are turned OFF.)
8. Check the level B of the oscilloscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B × 100 = less than ± 22%



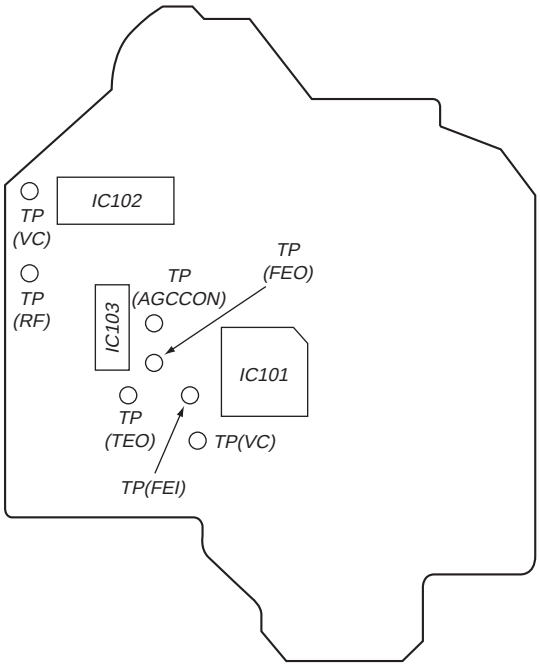
9. Press the DISPLAY button. (The tracking servo and sledding servo are turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 8.



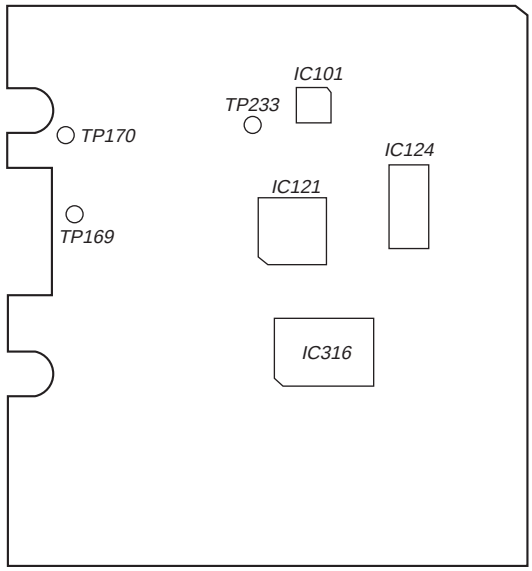
10. Disconnect the lead wire of TP308 (ADJ) connected in step 1.

Check Location :

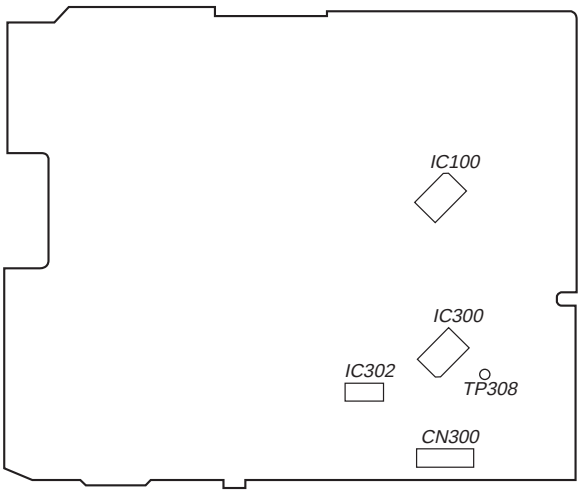
[BD (CD) Board] (Side A)



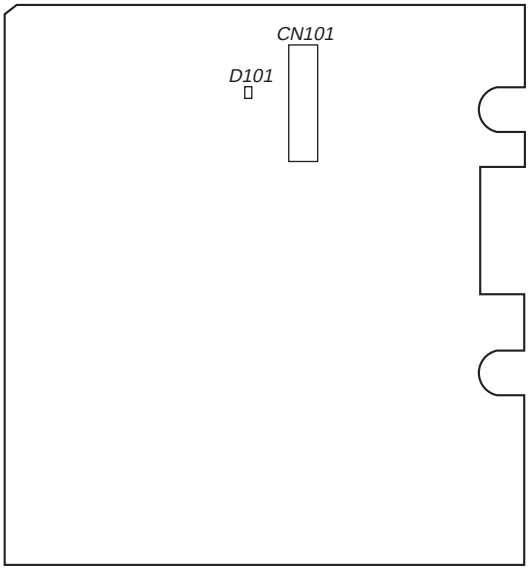
[BD (MD) Board] (Side A)



[MAIN Board]

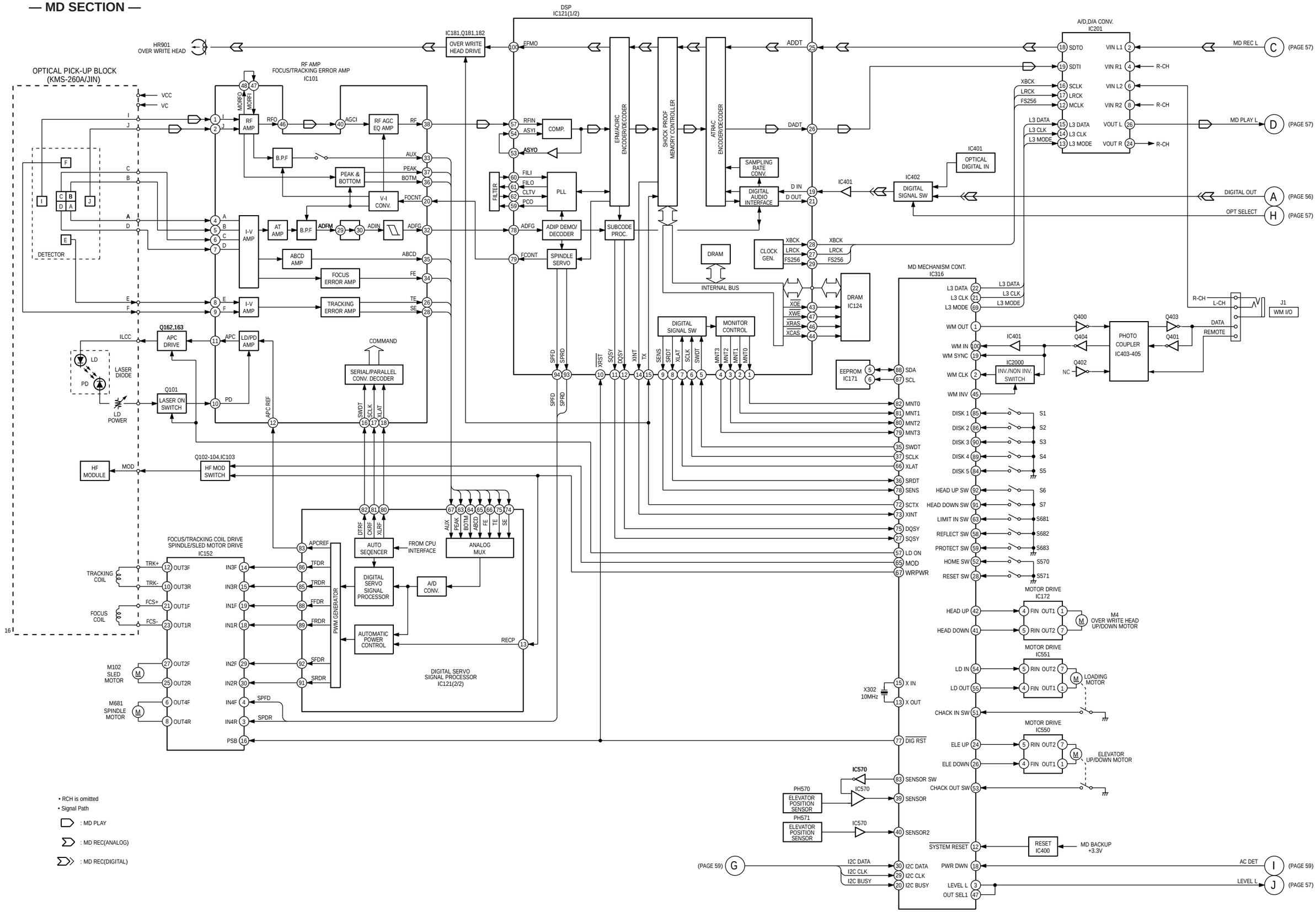


[BD (MD) Board] (Side B)

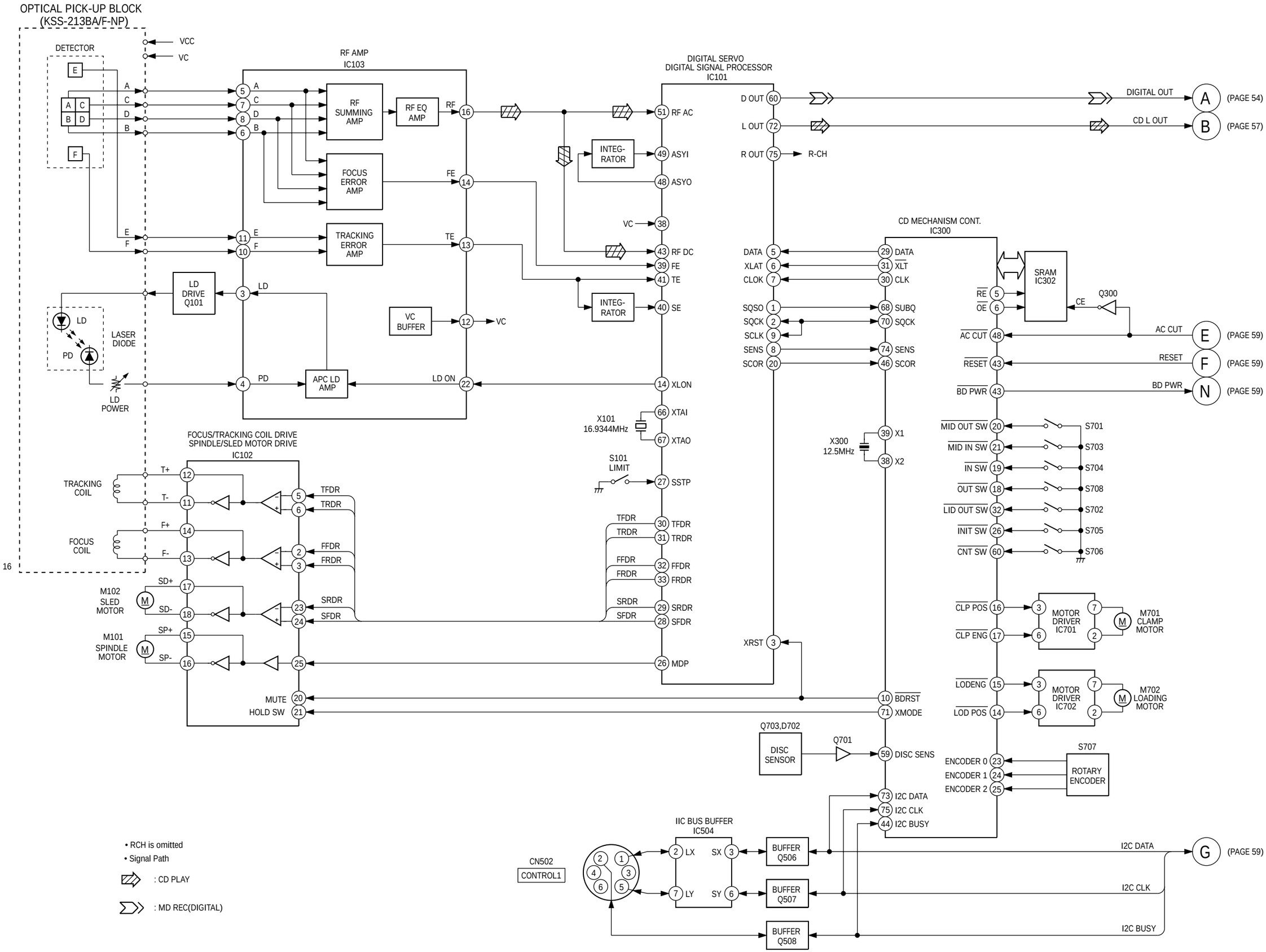


SECTION 7
DIAGRAMS

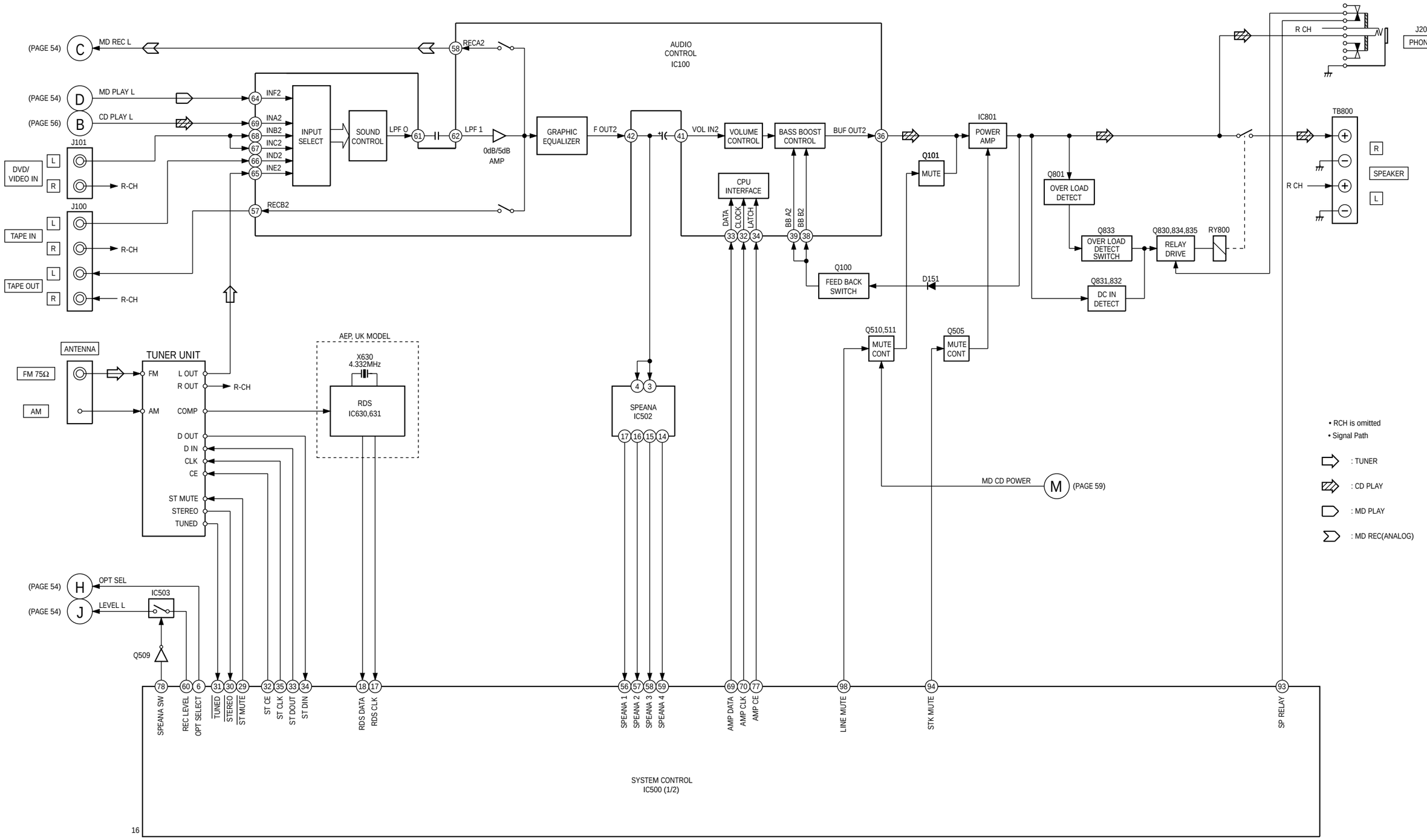
7-1. BLOCK DIAGRAMS
— MD SECTION —



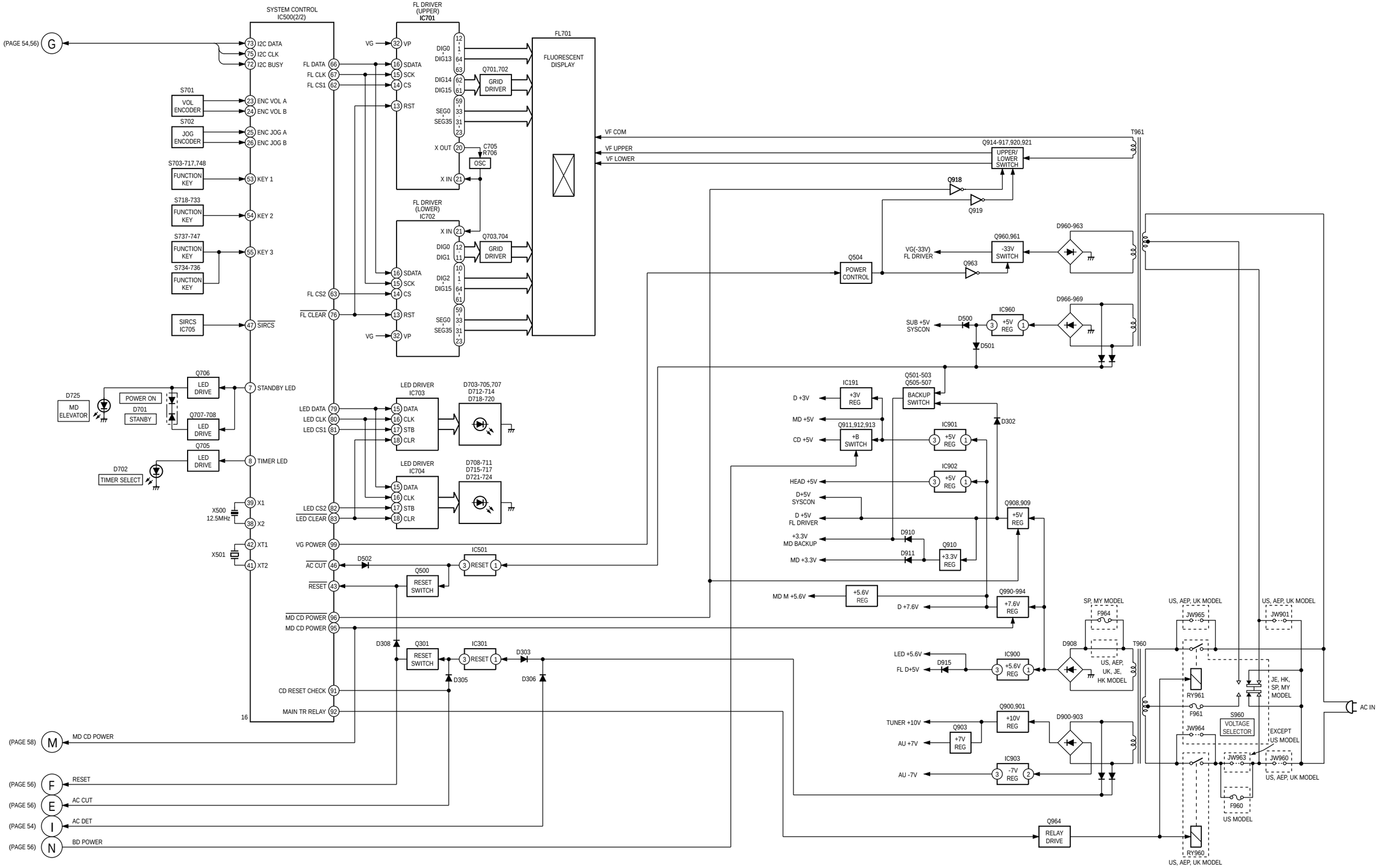
— CD SECTION —


OPTICAL PICK-UP BLOCK
(KSS-213BA/F-NP)
DETECTOR
VCC
VC
RF AMP
IC103
RF SUMMING AMP
RF EQ AMP
FOCUS ERROR AMP
TRACKING ERROR AMP
LD DRIVE Q101
VC BUFFER
APC LD AMP
INTEG-RATOR
LD
LASER DIODE
PD
LD POWER
DIGITAL SERVO
DIGITAL SIGNAL PROCESSOR
IC101
RF AC
ASYI
ASYO
VC
RF DC
FE
TE
SE
XLON
XTAI
XTAO
SSTP
TFDR
TRDR
FFDR
FRDR
SRDR
SFDR
MDP
XRST
X101
16.9344MHz
S101
LIMIT
X300
12.5MHz
X1
X2
D OUT
L OUT
R OUT
R-CH
DIGITAL OUT
CD L OUT
(PAGE 54)
(PAGE 57)
CD MECHANISM CONT.
IC300
DATA
XLAT
CLOK
SQSO
SQCK
SCLK
SENS
SCOR
SUBQ
SQCK
SENS
SCOR
SRAM
IC302
RE
OE
CE
Q300
AC CUT
RESET
BD PWR
(PAGE 59)
MID OUT SW
MID IN SW
IN SW
OUT SW
LID OUT SW
INIT SW
CNT SW
S701
S703
S704
S708
S702
S705
S706
CLP POS
CLP ENG
MOTOR DRIVER IC701
M701 CLAMP MOTOR
LODENG
LOD POS
MOTOR DRIVER IC702
M702 LOADING MOTOR
ENCODER 0
ENCODER 1
ENCODER 2
S707
ROTARY ENCODER
Q703,D702
DISC SENSOR
Q701
DISC SENS
BDRST
XMODE
I2C DATA
I2C CLK
I2C BUSY
FOCUS/TRACKING COIL DRIVE
SPINDLE/SLED MOTOR DRIVE
IC102
TRACKING COIL
FOCUS COIL
M102 SLED MOTOR
M101 SPINDLE MOTOR
T+
T-
F+
F-
SD+
SD-
SP+
SP-
MUTE
HOLD SW
IIC BUS BUFFER
IC504
CN502
CONTROL1
LX
LY
SX
SY
BUFFER Q506
BUFFER Q507
BUFFER Q508
(PAGE 59)
• RCH is omitted
• Signal Path
: CD PLAY
: MD REC(DIGITAL)

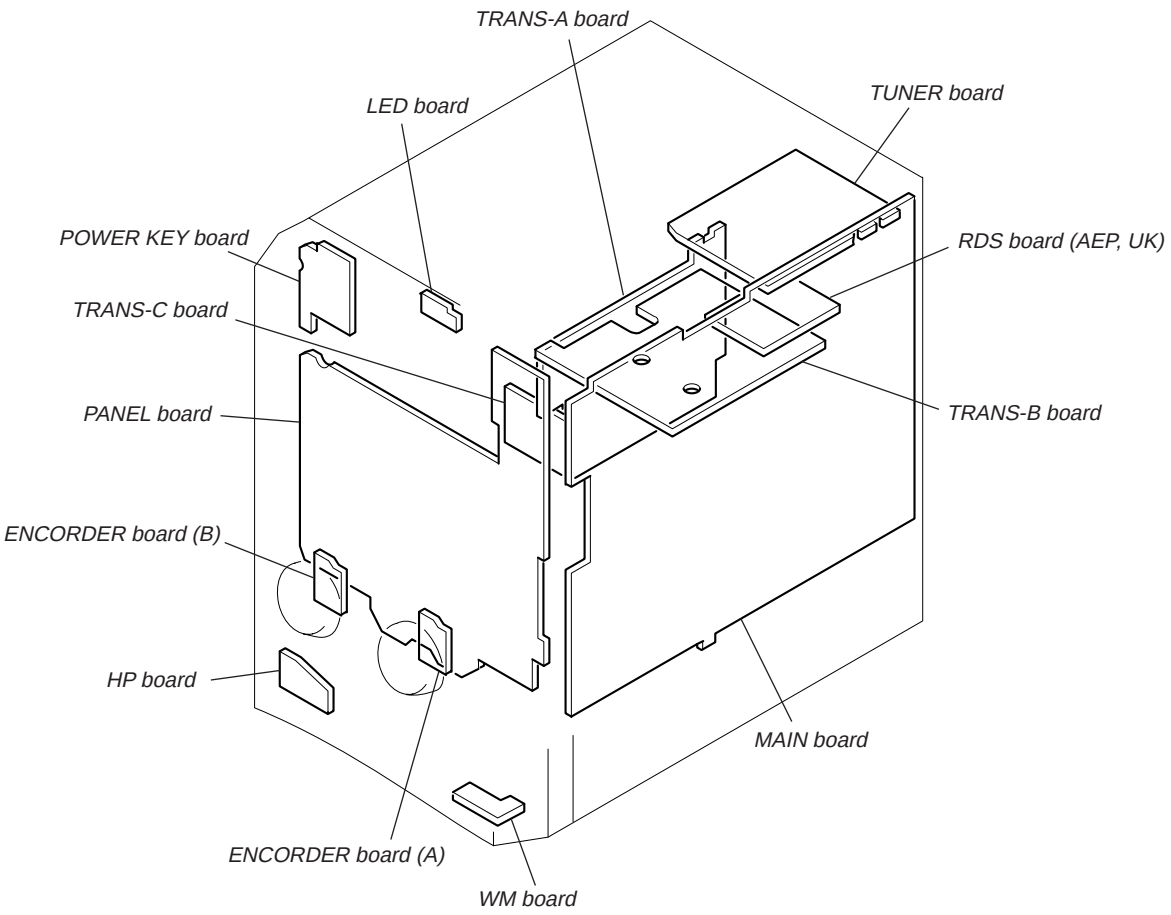
— AUDIO SECTION —

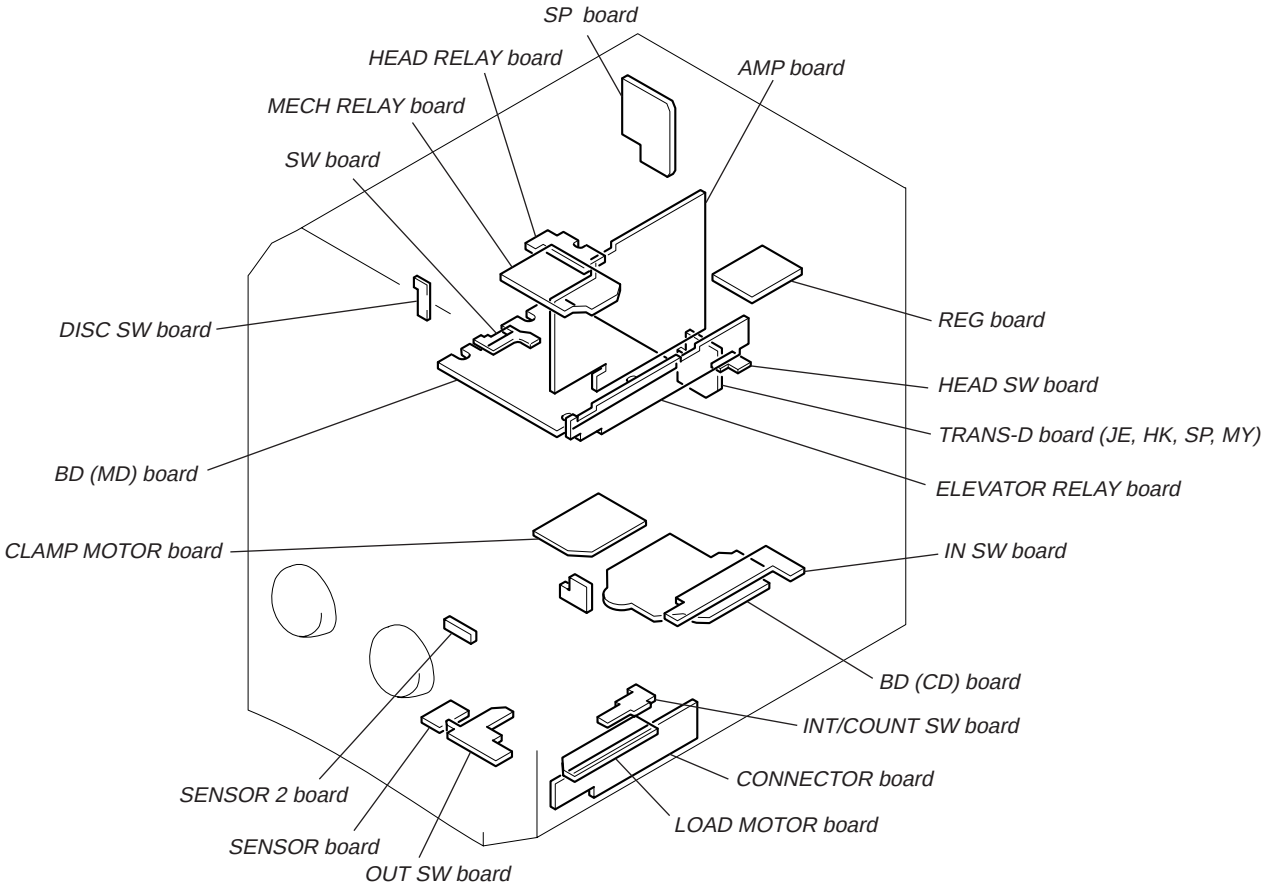


— POWER SECTION —



7-2. CIRCUIT BOARDS LOCATION





Note on Schematic Diagrams:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- B + : B+ Line.
- B − : B– Line.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

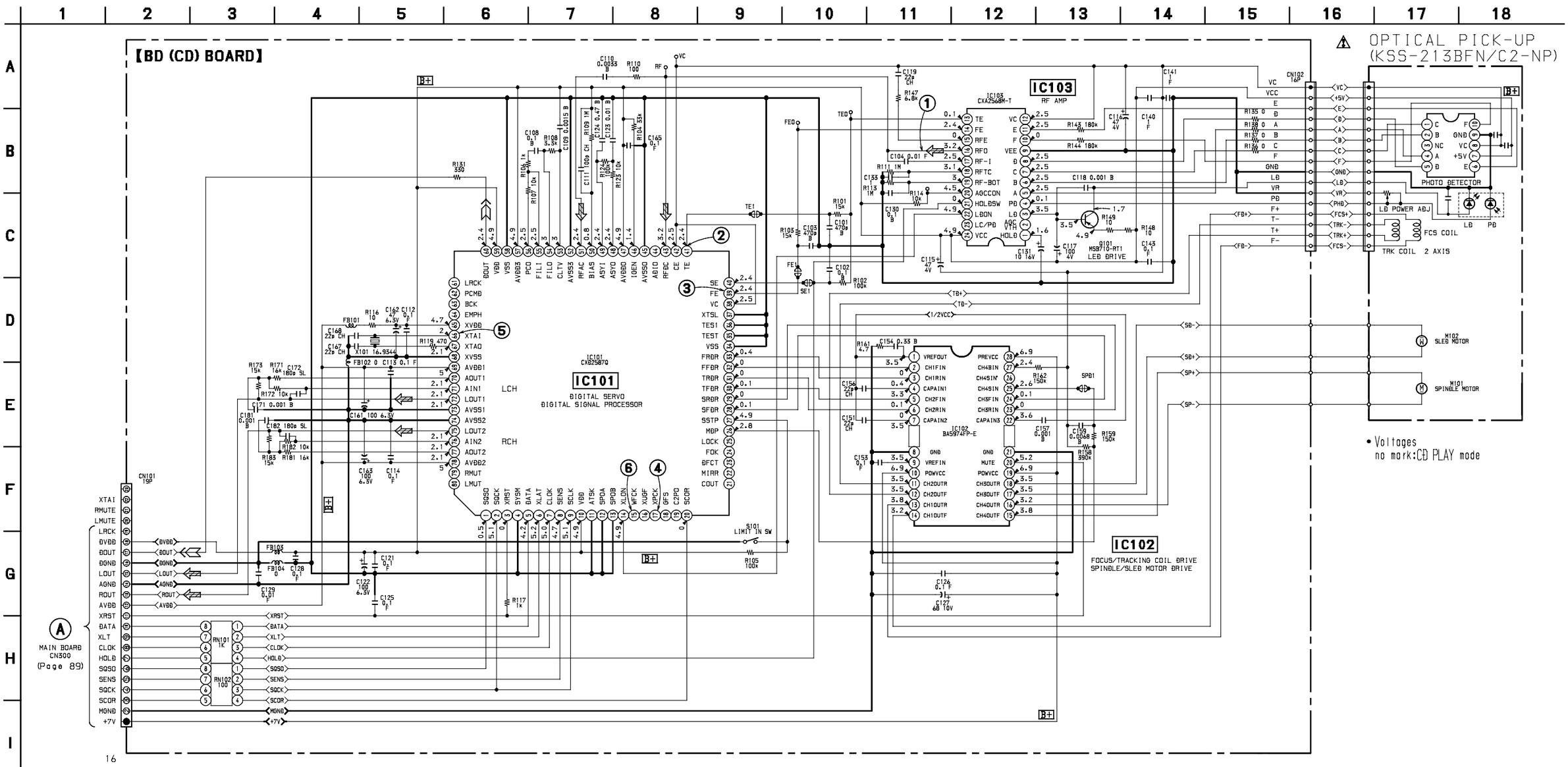
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  : TUNER
  : CD PLAY
  : MD PLAY
  : MD REC (ANALOG)
  : MD REC (DIGITAL)
- Abbreviation
  SP : Singapore model.
  MY : Malaysia model.
  JE : Tourist model.
  HK : Hong Kong model.

Note on Printed Wiring Boards:

- ○——— : parts extracted from the component side.
- ○ : Through hole.
- △ : internal component.
- ▒▒▒ : Pattern of the rear side.

7-3. SCHEMATIC DIAGRAM — CD SECTION —

• Refer to page 103 for Waveforms. • Refer to page 105 for IC Block Diagrams. • Refer to page 111, 112 for IC Pin Function Description.



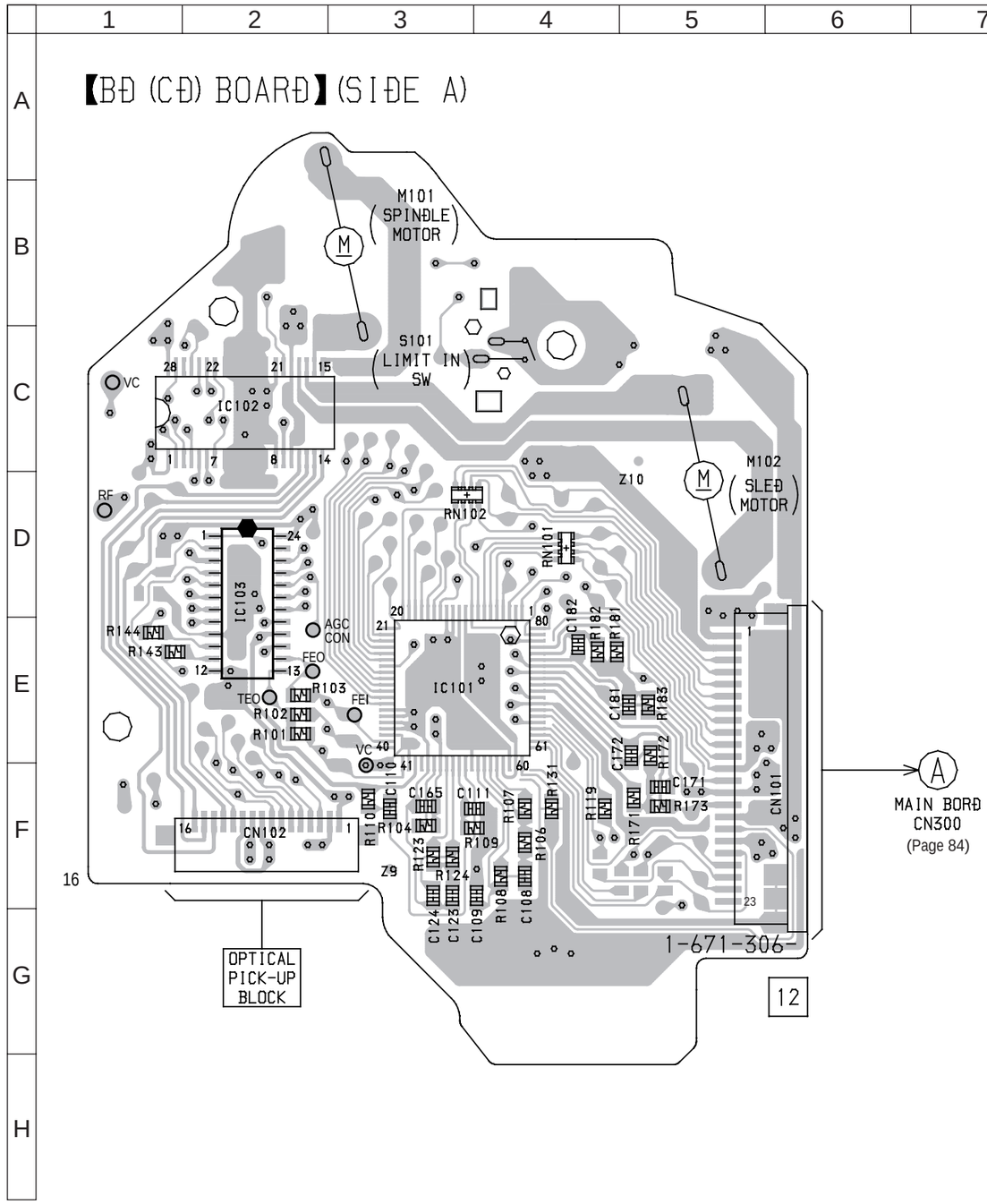
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

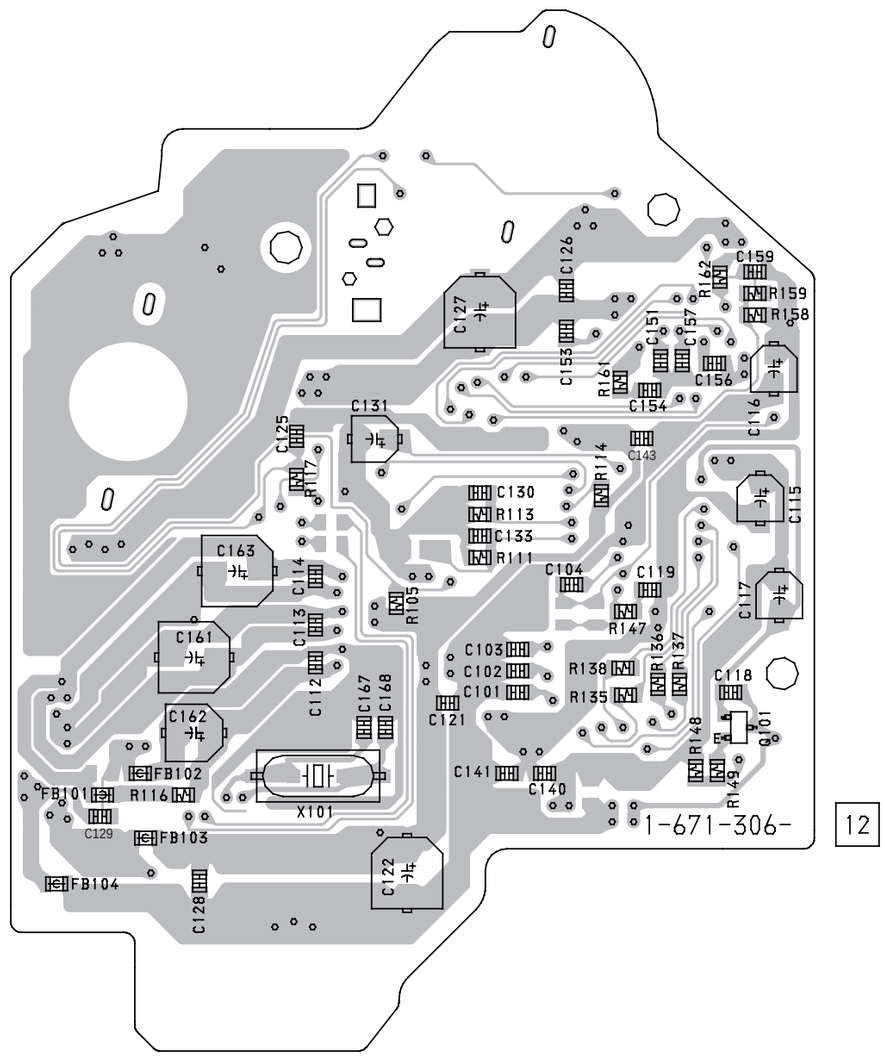
7-4. PRINTED WIRING BOARD — CD SECTION —

• Refer to page 61 for Circuit Boards Location.

• **Semiconductor Location**

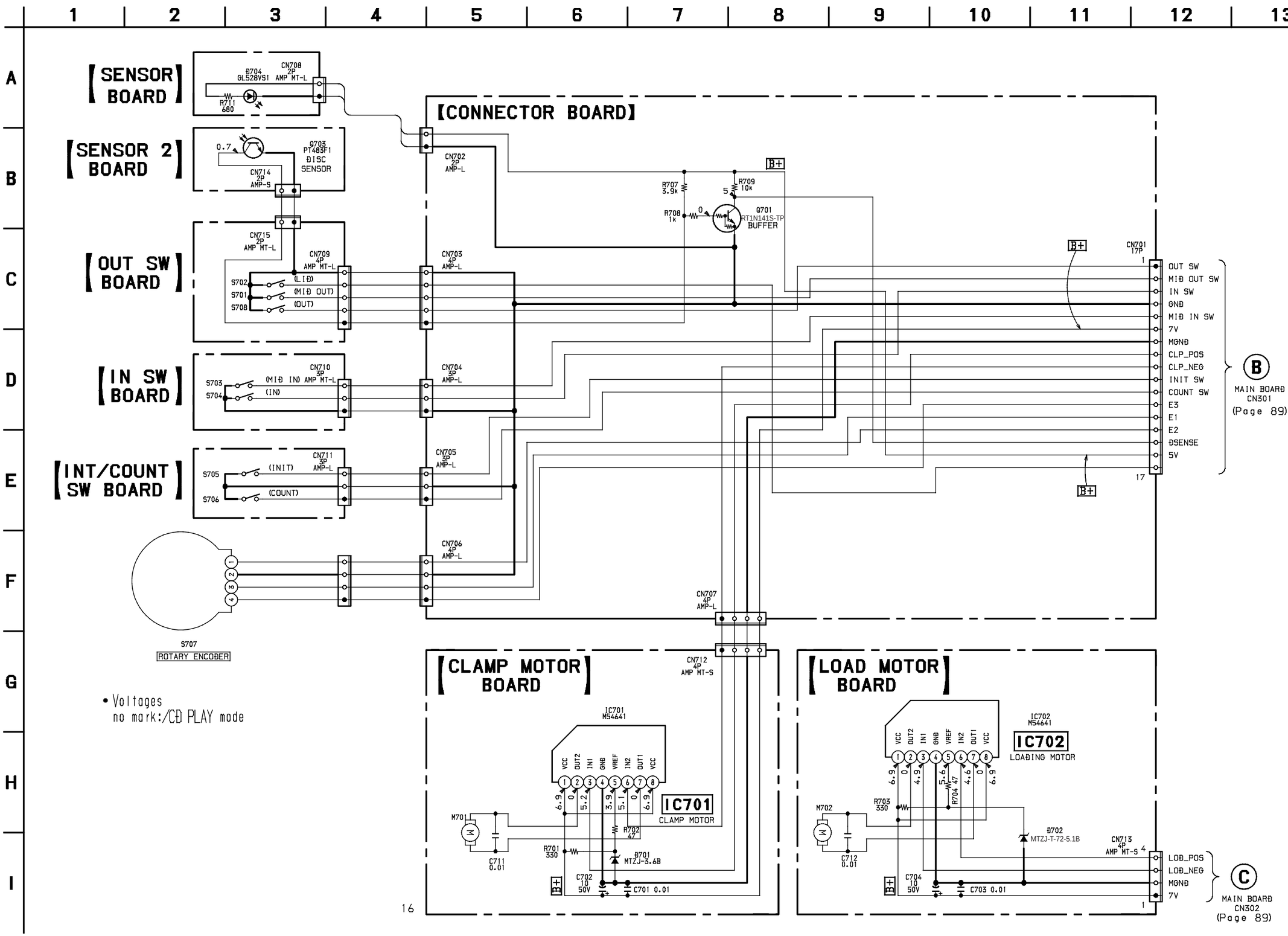
Ref. No.	Location
IC101	E-3
IC102	C-2
IC103	D-2
Q101	F-12





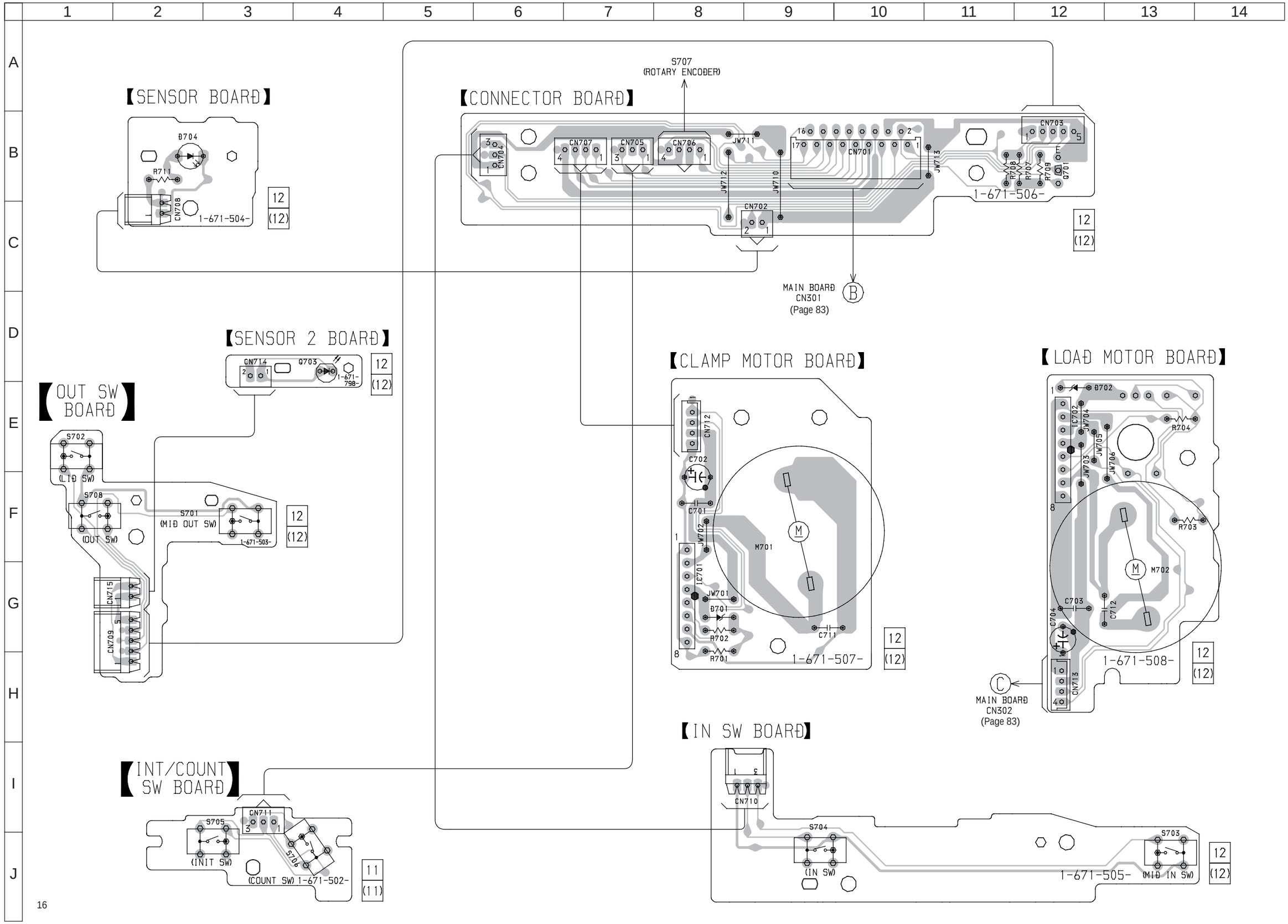
7-5. SCHEMATIC DIAGRAM —MOTOR SECTION —

• Refer to page 109 for IC Block Diagrams.



7-6. PRINTED WIRING BOARD — MOTOR SECTION —

• Refer to page 61 for Circuit Boards Location.

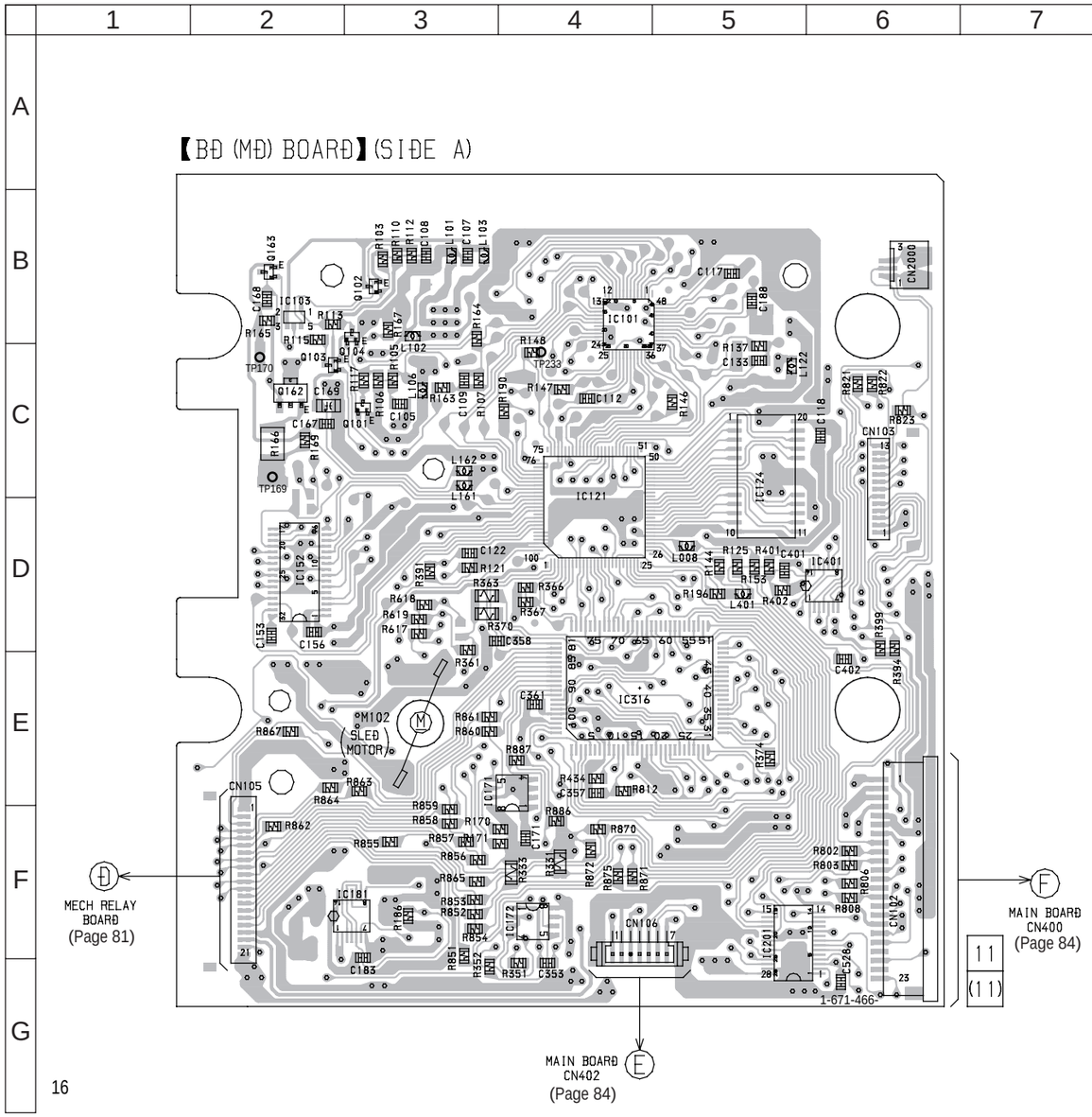


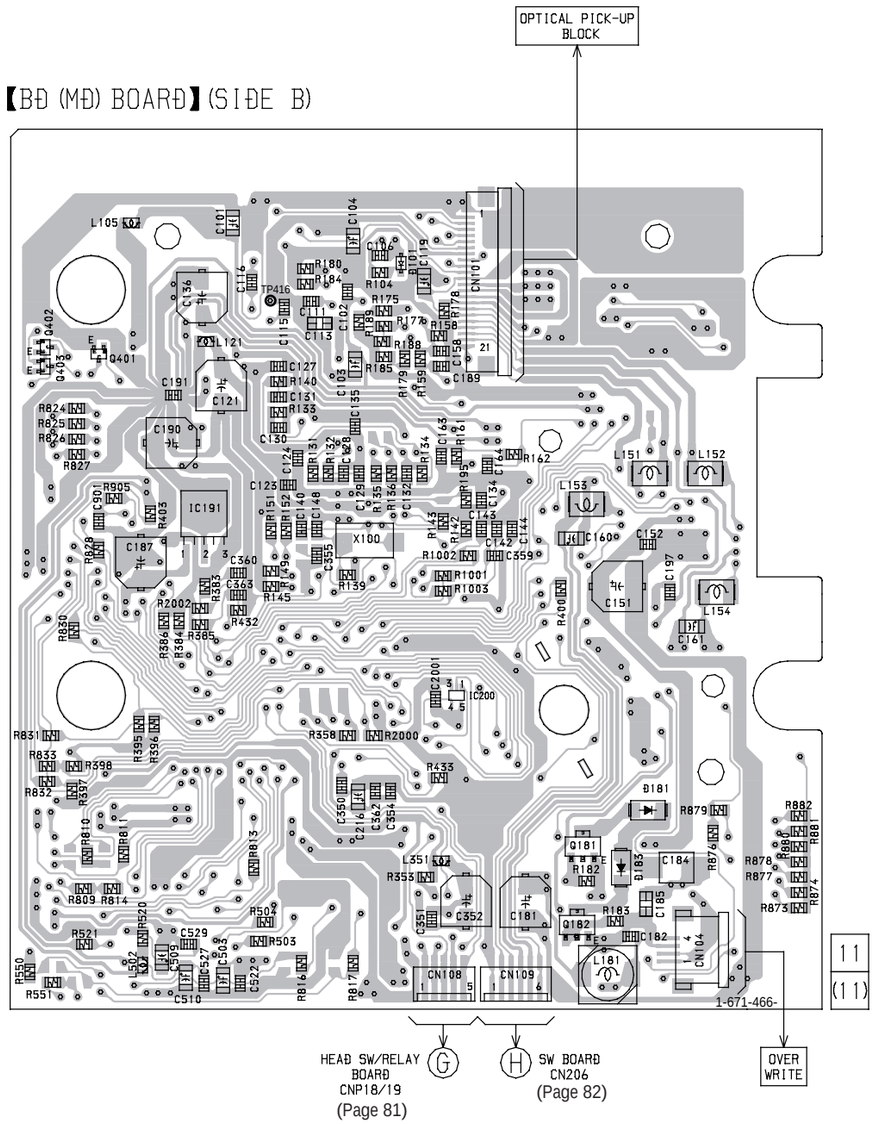
7-7. PRINTED WIRING BOARD — MD SECTION —

• Refer to page 61 for Circuit Boards Location.

• **Semiconductor Location**

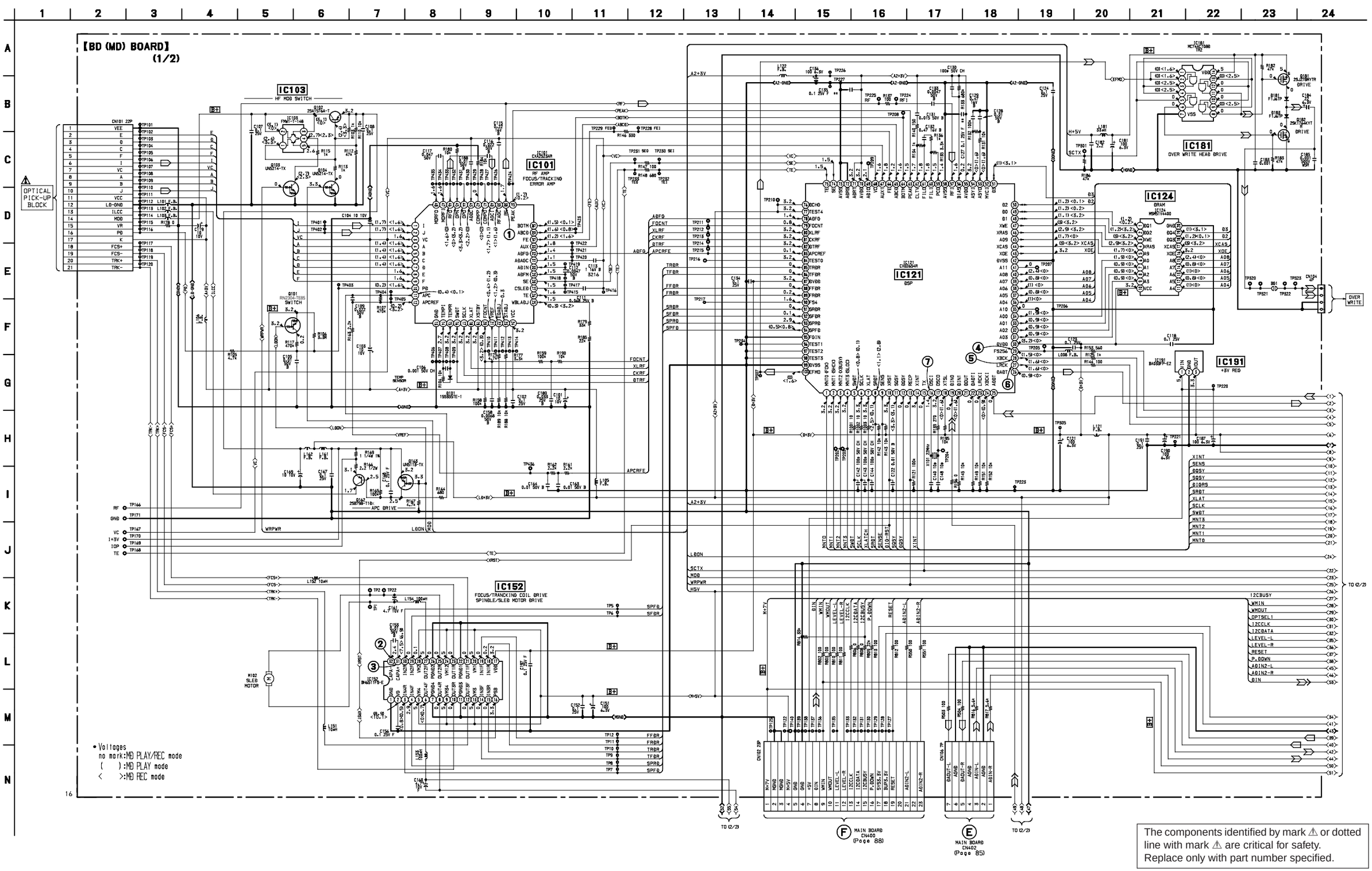
Ref. No.	Location
D101	B-10
D181	F-12
D183	F-12
IC101	B-4
IC103	B-2
IC121	D-4
IC124	C-5
IC152	D-2
IC171	E-3
IC172	F-3
IC181	F-2
IC191	D-9
IC200	E-11
IC201	F-5
IC316	E-4
IC401	D-6
Q101	C-3
Q102	B-3
Q103	C-2
Q104	C-3
Q162	C-2
Q163	B-2
Q181	F-11
Q182	F-11
Q401	C-8
Q402	C-8
Q403	C-8





7-8. SCHEMATIC DIAGRAM — MD SECTION (1/2) —

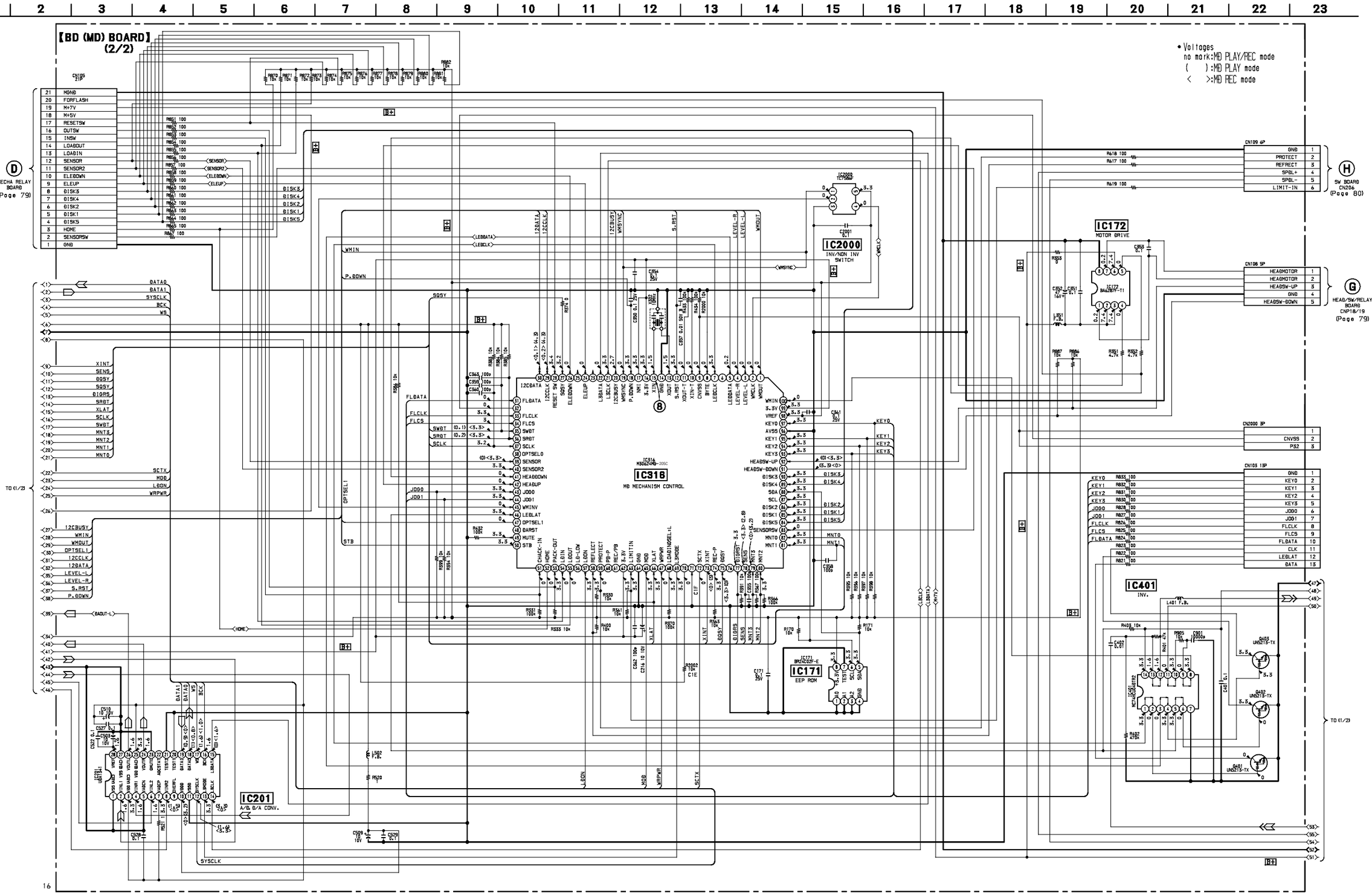
• Refer to page 104 for Waveforms. • Refer to page 106, 107 for IC Block Diagrams. • Refer to page 113 to 116 for IC Pin Function Description.



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

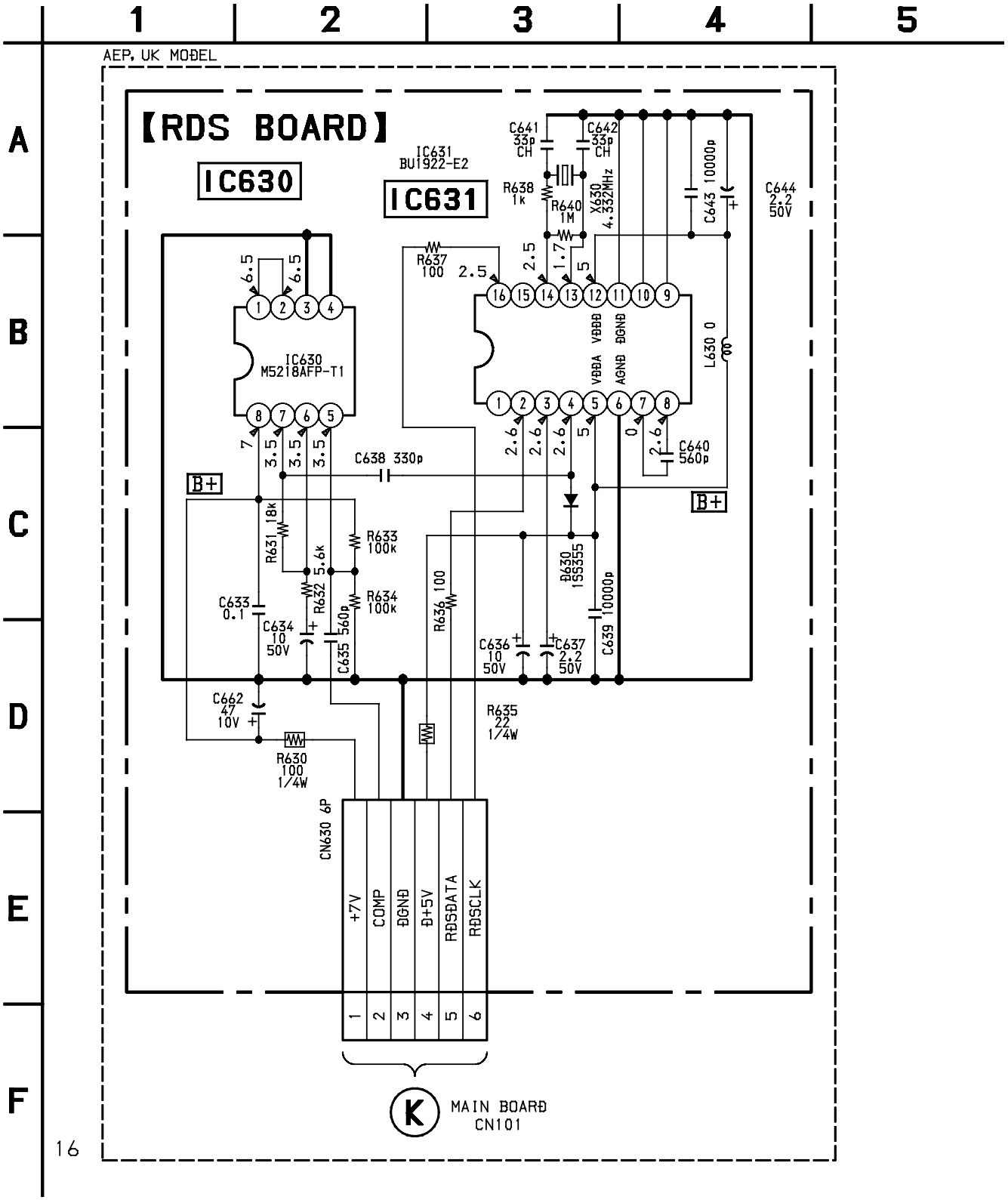
7-9. SCHEMATIC DIAGRAM — MD SECTION (2/2) —

• Refer to page 71 for IC Block Diagrams. • Refer to page 106 for Waveforms.
• Refer to page 108 for IC Block Diagrams. • Refer to page 107 to 119 for IC Pin Function Description.



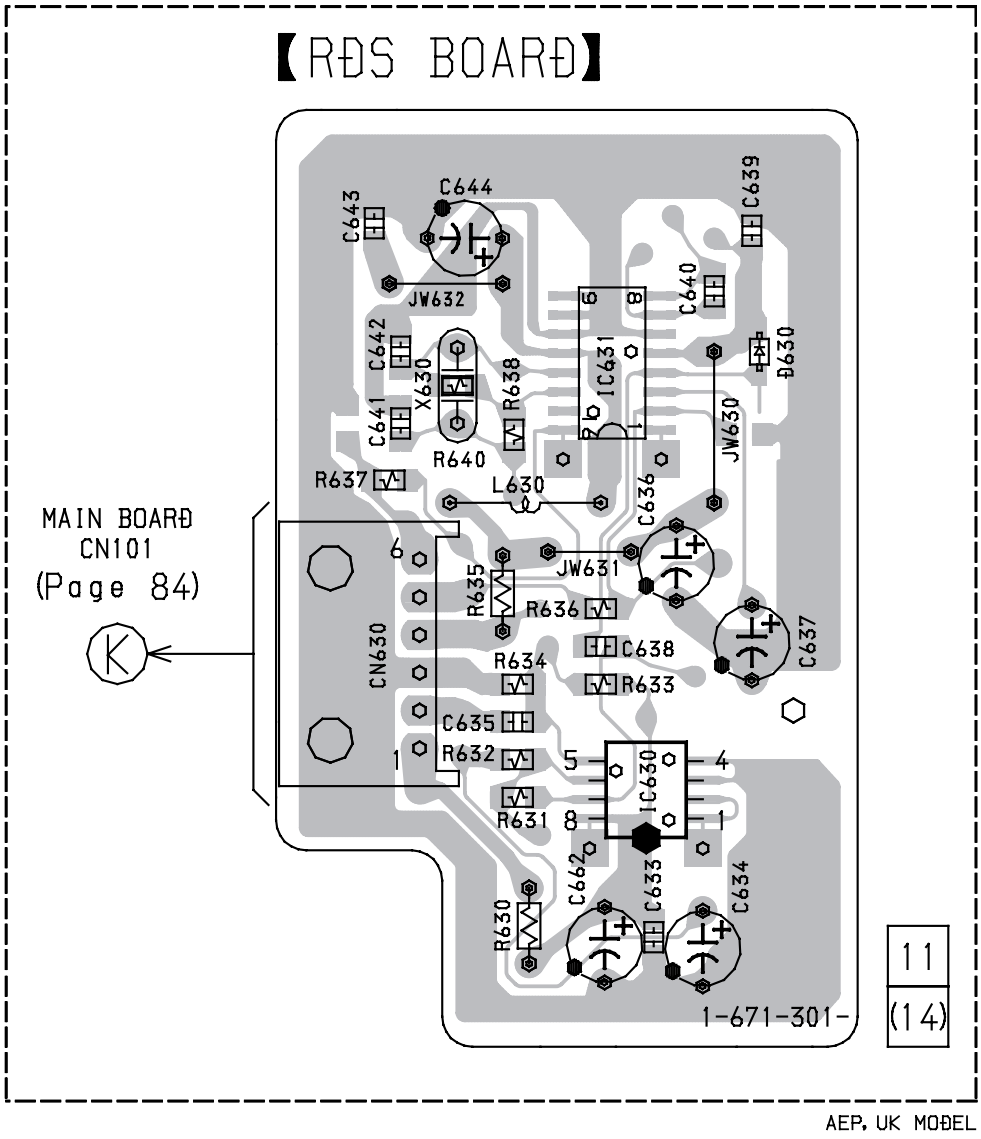
7-10. SCHEMATIC DIAGRAM — RDS SECTION —

• Refer to page 110 for IC Block Diagrams.
• Refer to page 120 for IC Pin Function Description.



7-11. PRINTED WIRING BOARD — RDS SECTION —

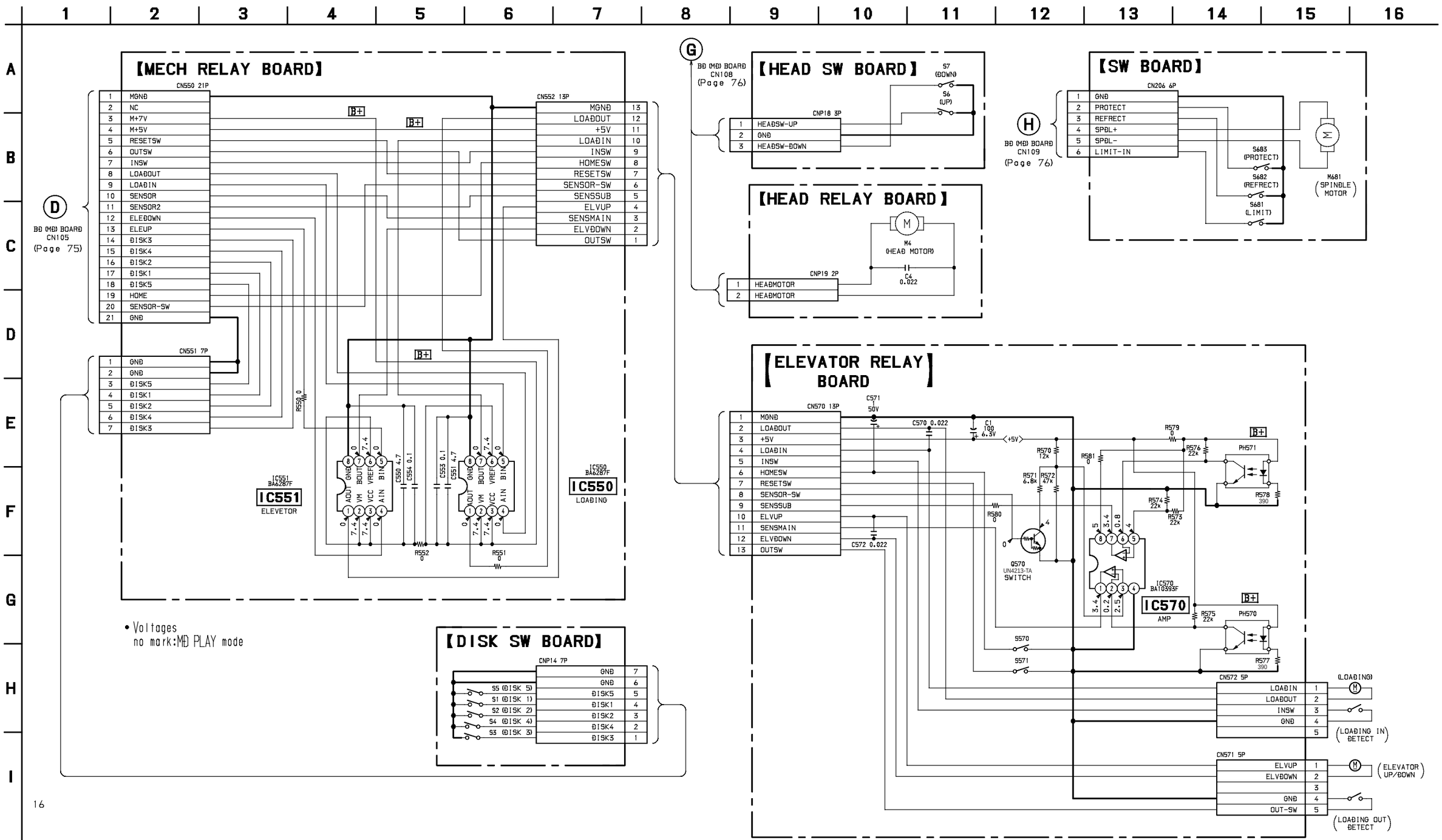
• Refer to page 61 for Circuit Boards Location.



AEP, UK MOÐEL

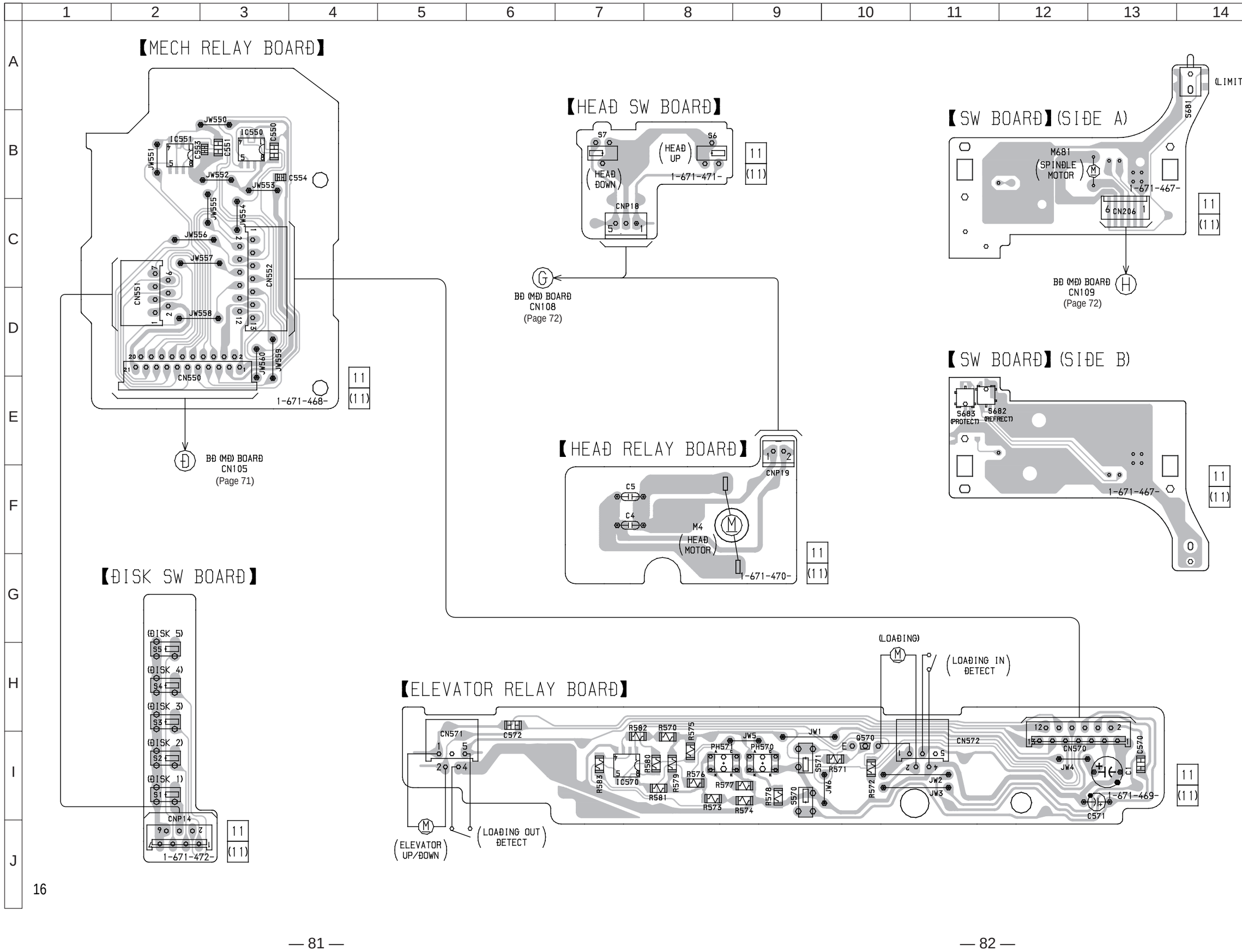
7-12. SCHEMATIC DIAGRAM — RELAY SECTION —

• Refer to page 108 for IC Block Diagrams.



7-13. PRINTED WIRING BOARD — RELAY SECTION —

• Refer to page 61 for Circuit Boards Location.



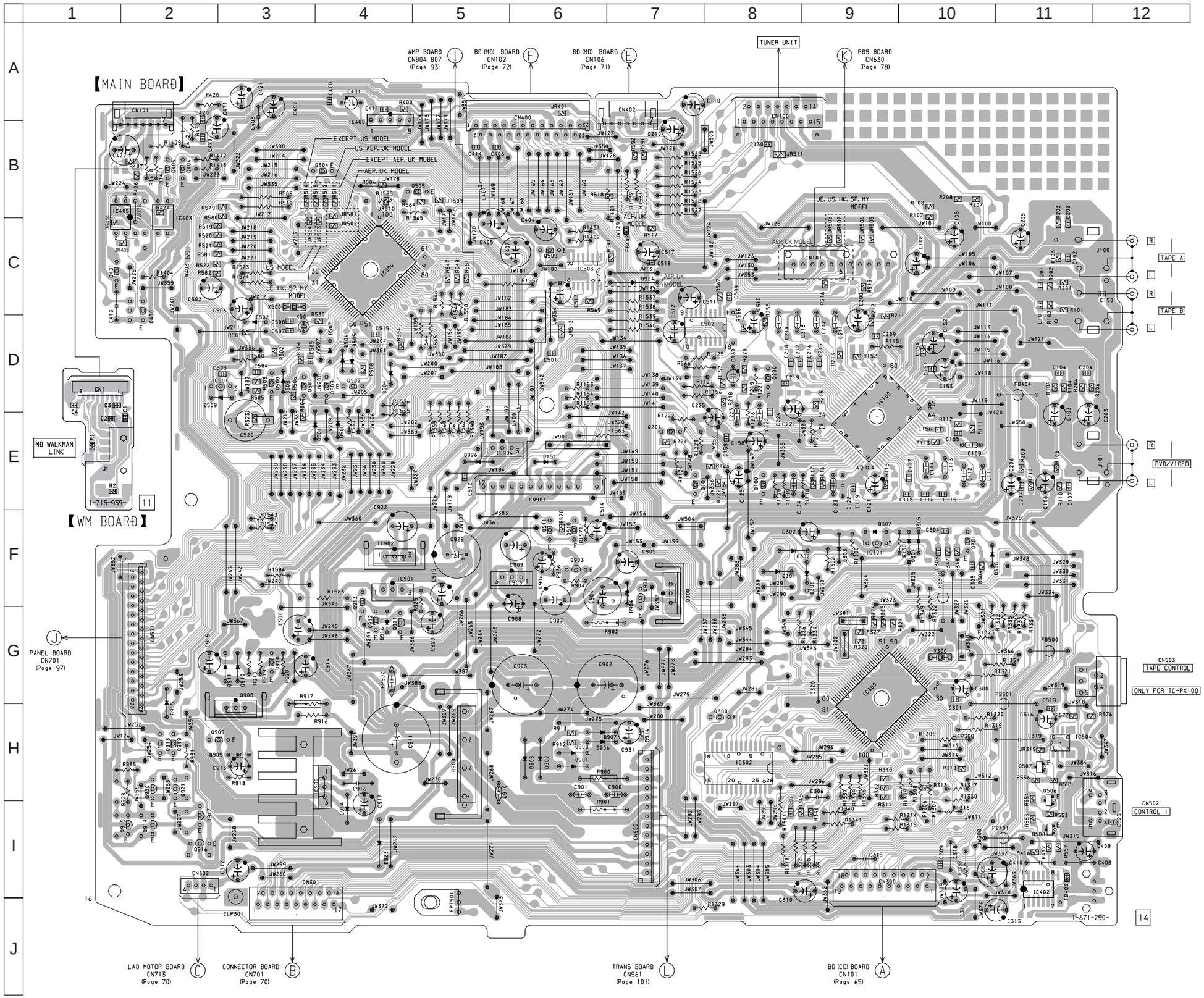
16

7-14. PRINTED WIRING BOARD — MAIN SECTION —

• Refer to page 61 for Circuit Boards Location.

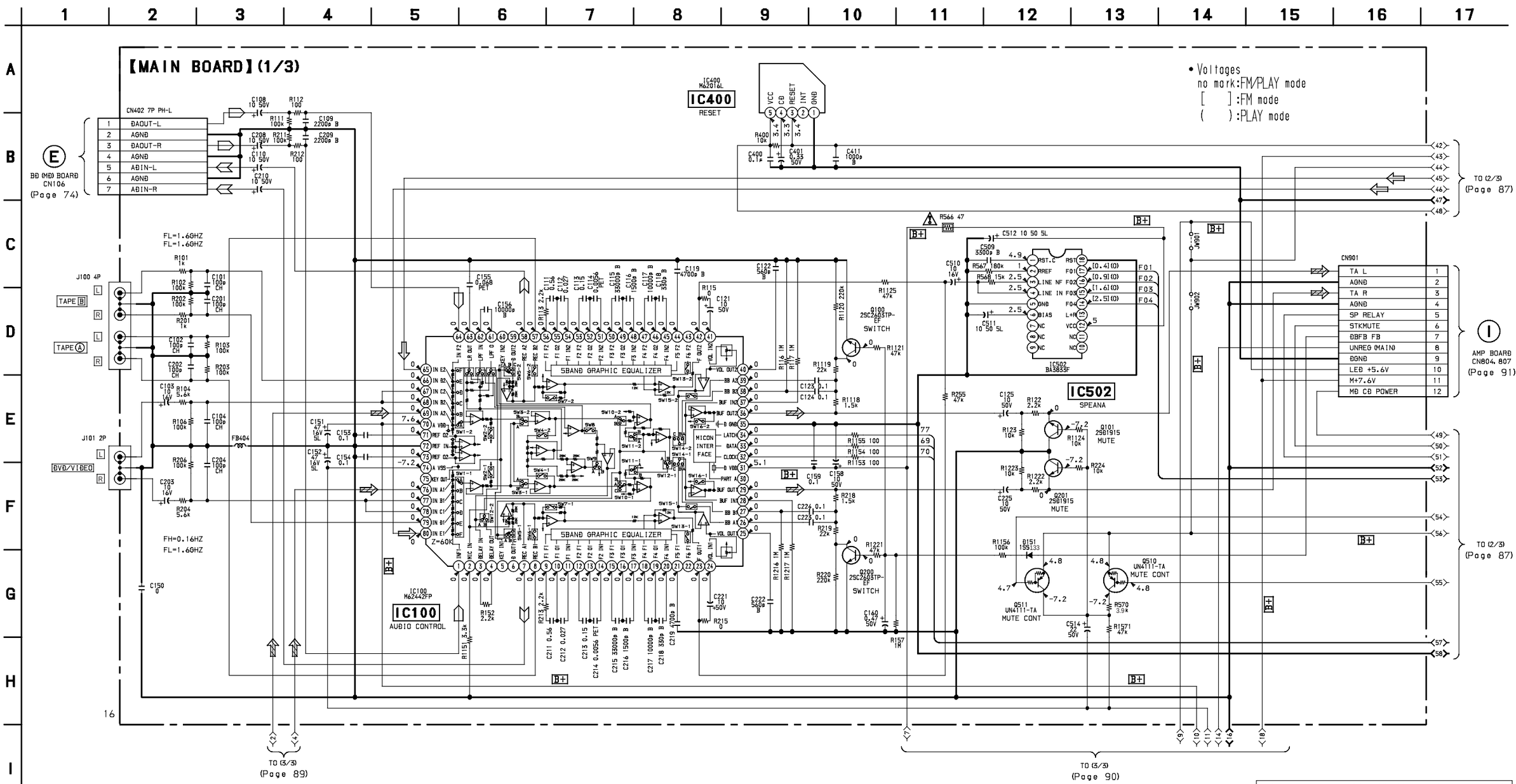
• **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D151	E-6	IC503	C-6
D301	F-8	IC504	H-11
D302	F-8	IC900	H-4
D303	F-9	IC901	F-4
D304	F-10	IC902	F-4
D305	F-10	IC903	F-6
D306	F-8	IC904	E-5
D307	F-9		
D308	F-11	Q100	E-8
D500	E-4	Q101	E-7
D501	E-4	Q200	D-8
D502	D-3	Q201	D-7
D503	D-3	Q300	G-8
D504	D-4	Q301	F-10
D505	D-4	Q400	C-2
D506	D-4	Q401	C-1
D507	D-4	Q403	B-2
D509	D-3	Q404	B-2
D900	H-6	Q500	D-3
D901	H-6	Q501	D-3
D902	H-6	Q502	D-4
D903	H-6	Q503	D-4
D904	F-7	Q504	B-4
D906	H-6	Q505	B-5
D907	H-6	Q506	I-11
D908	H-5	Q507	H-11
D909	H-3	Q508	I-11
D910	G-3	Q509	C-6
D911	G-3	Q510	E-6
D914	I-4	Q511	E-6
D915	G-2	Q900	F-7
D916	G-4	Q901	F-7
D923	I-4	Q903	F-6
D924	C-7	Q908	G-3
D926	E-5	Q909	H-3
		Q910	G-3
IC100	D-9	Q911	G-4
IC300	G-9	Q912	G-4
IC301	F-9	Q913	F-4
IC302	H-8	Q914	I-2
IC400	B-4	Q915	I-2
IC402	I-11	Q916	I-2
IC403	C-2	Q917	I-2
IC405	C-1	Q918	H-2
IC500	C-4	Q919	H-2
IC501	D-3	Q920	H-2
IC502	C-8	Q921	H-2



7-15. SCHEMATIC DIAGRAM — MAIN SECTION (1/3) —

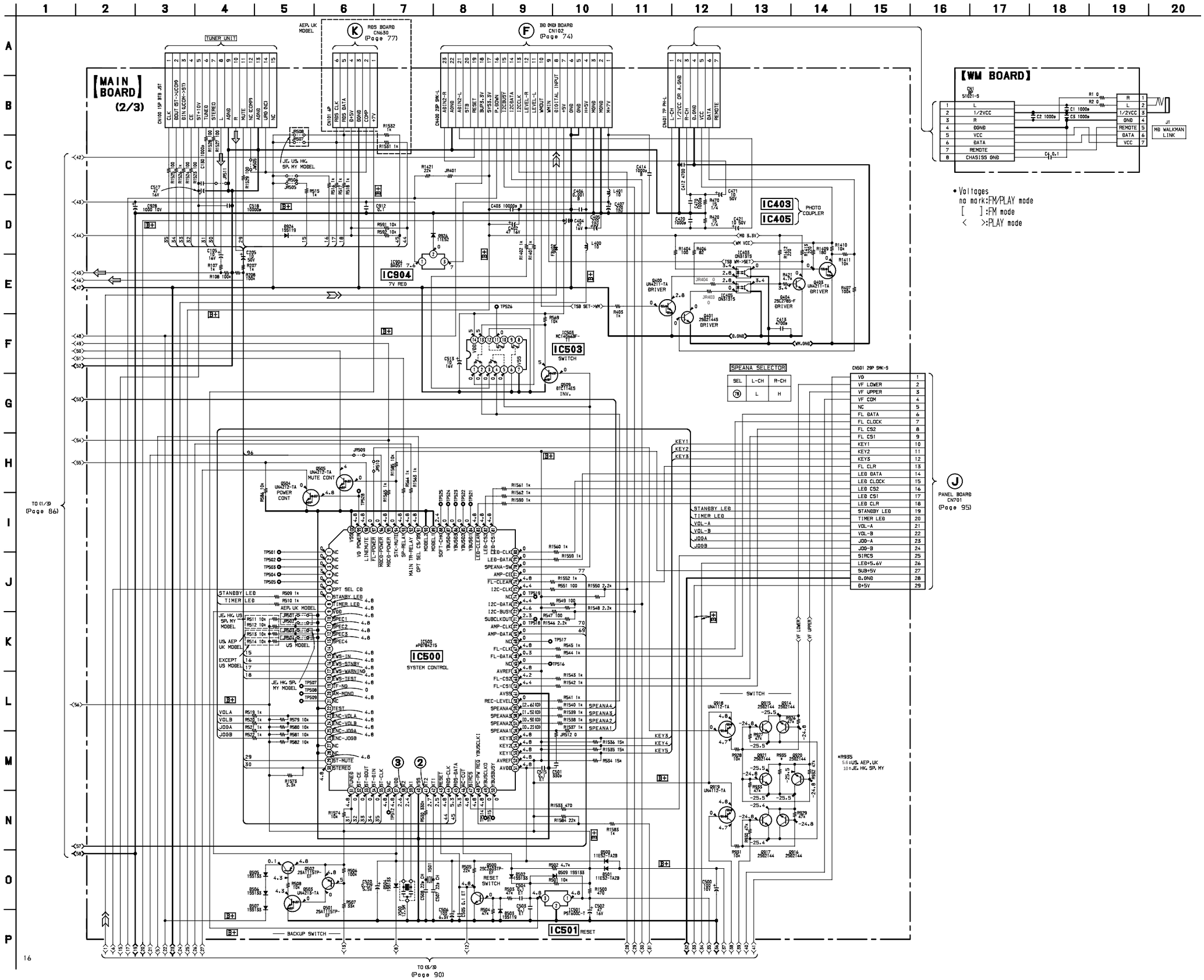
• Refer to page 109 for IC Block Diagrams.



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

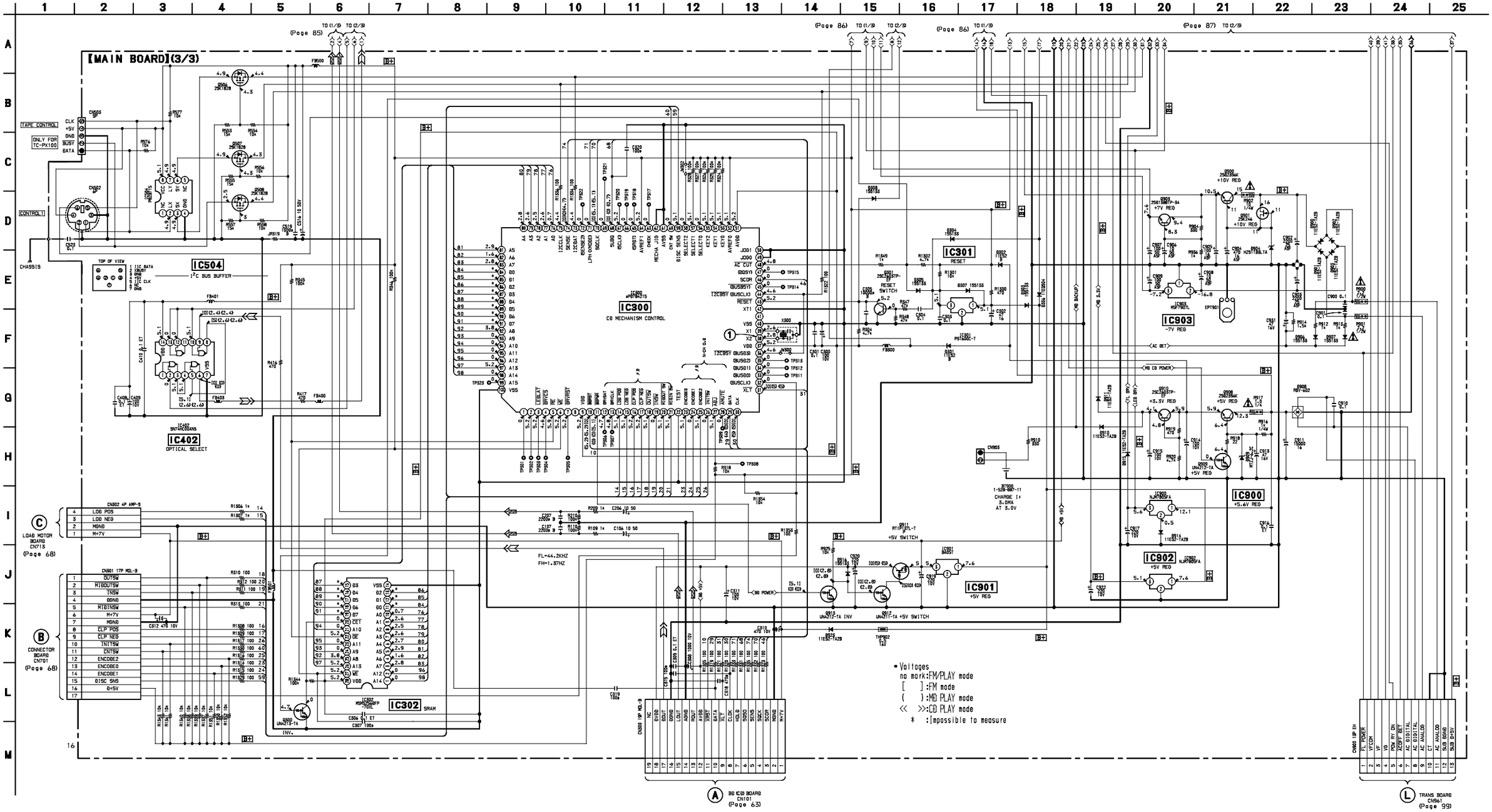
7-16. SCHEMATIC DIAGRAM — MAIN SECTION (2/3) —

• Refer to page 83 for Printed Wiring Board. • Refer to page 104 for Waveforms.
• Refer to page 123, 124 for IC Pin Function Description.



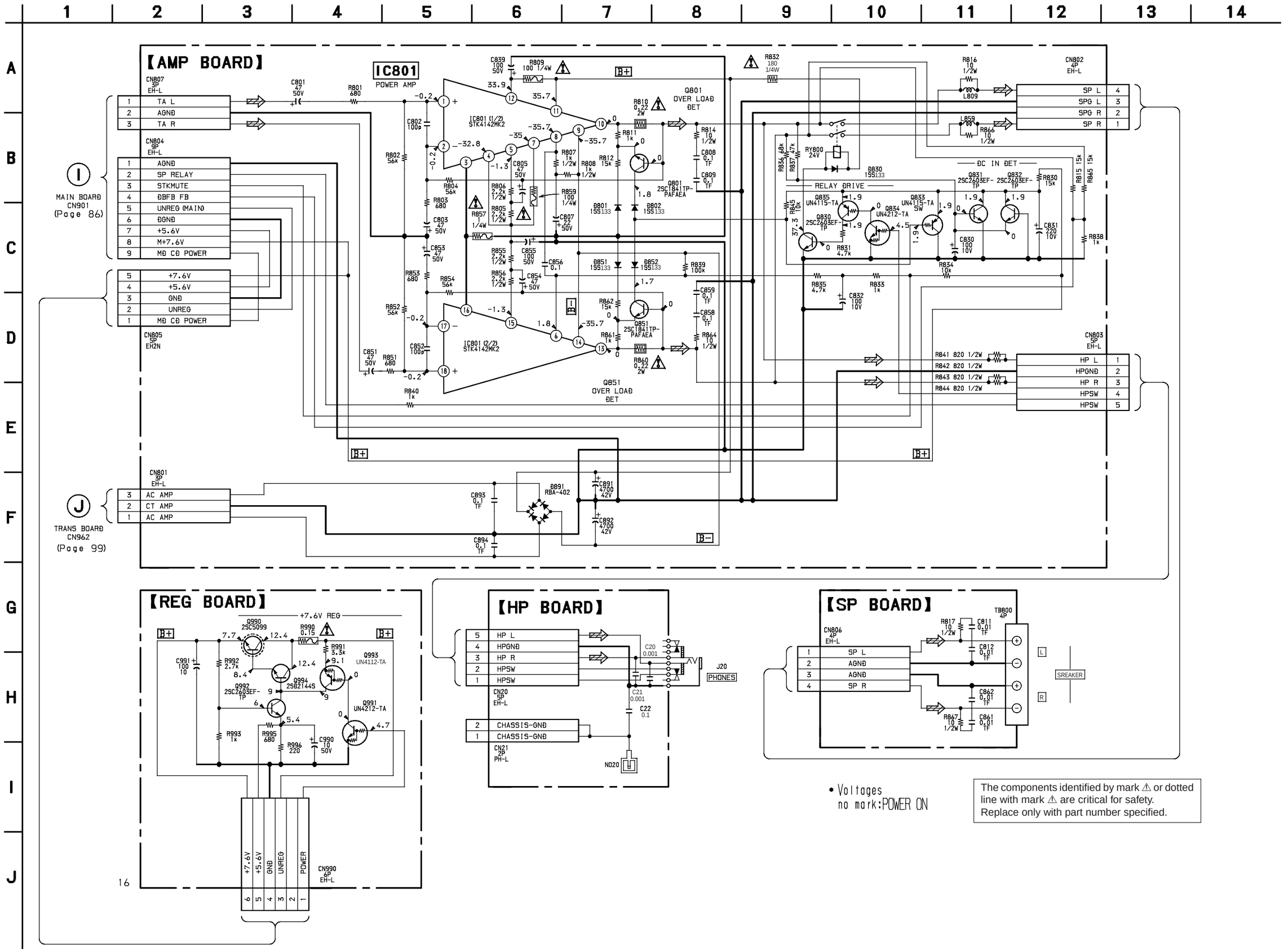
7-17. SCHEMATIC DIAGRAM — MAIN SECTION (3/3) —

• Refer to page 83 for Printed Wiring Board. • Refer to page 104 for Waveforms.
• Refer to page 109 for IC Block Diagrams. • Refer to page 121, 122 for IC Pin Function Description.



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

7-18. SCHEMATIC DIAGRAM — AMP SECTION —



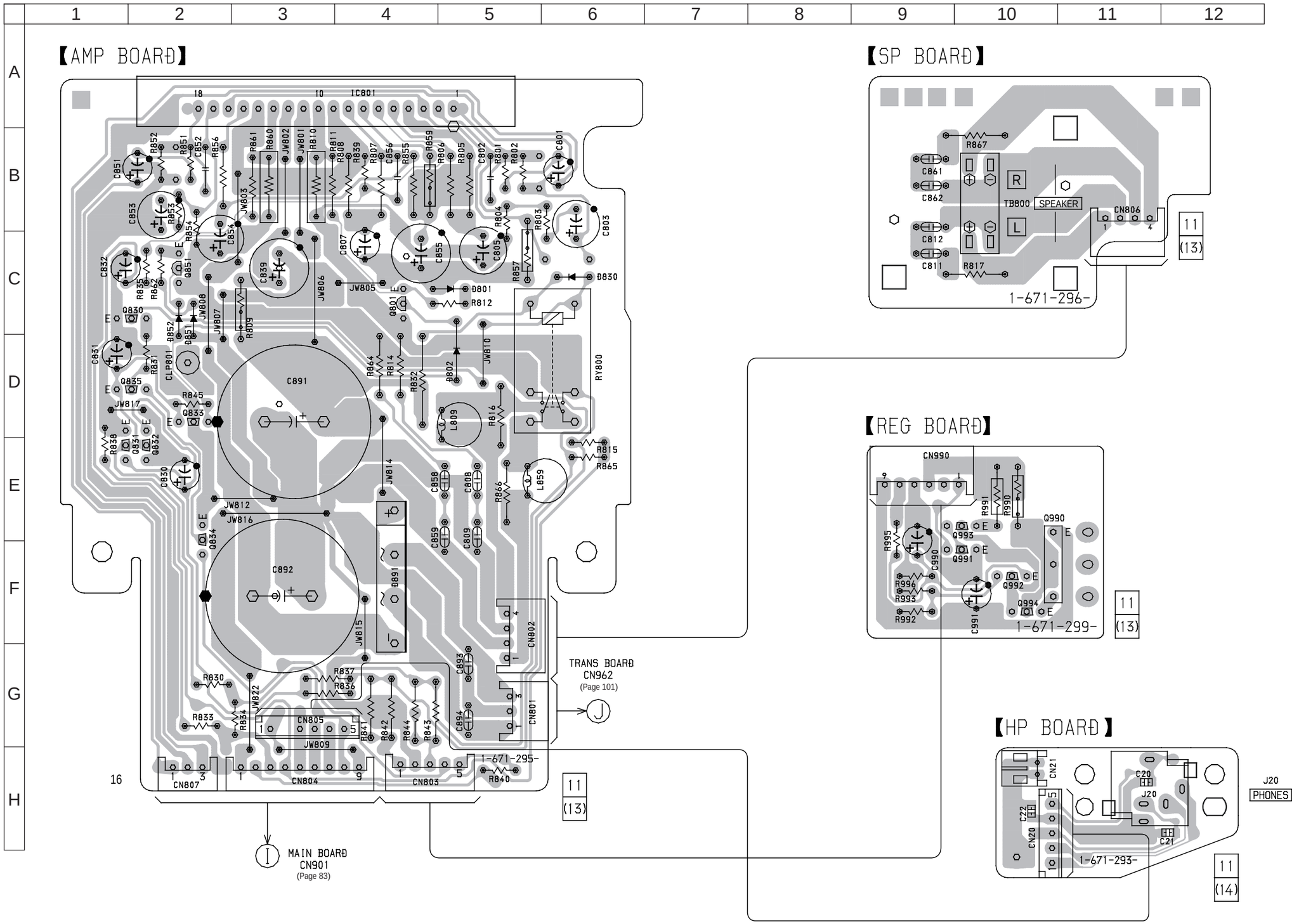
• Voltages
no mark:POWER ON

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

7-19. PRINTED WIRING BOARD — AMP SECTION —

• Refer to page 61 for Circuit Boards Location.

【AMP BOARD】



【SP BOARD】

【REG BOARD】

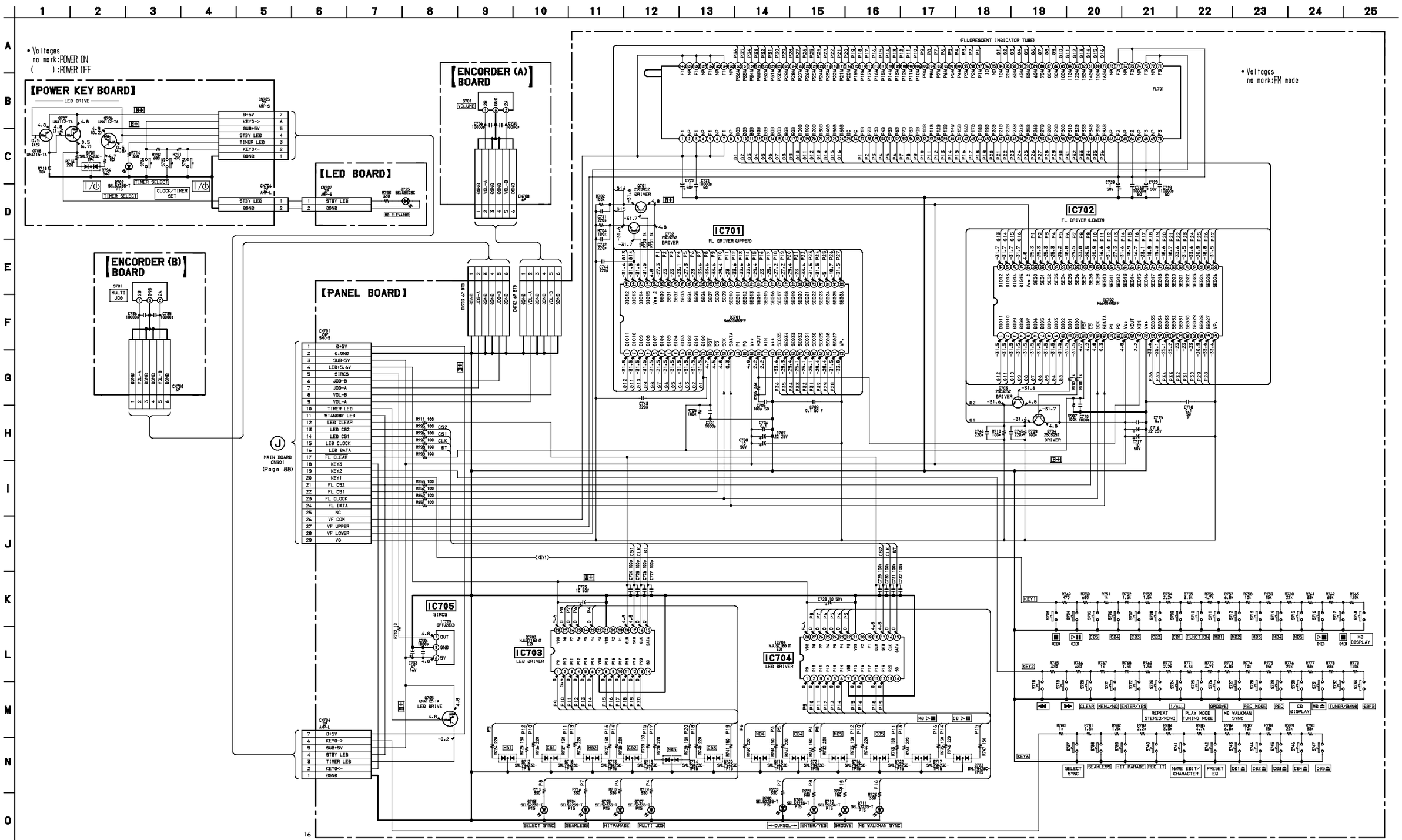
【HP BOARD】

• **Semiconductor Location**

Ref. No.	Location
D801	C-5
D802	D-5
D830	C-6
D851	C-2
D852	C-2
D891	F-4
IC801	A-4
Q801	C-4
Q830	C-2
Q831	E-2
Q832	E-2
Q833	D-2
Q834	F-2
Q835	D-2
Q851	C-2
Q990	E-11
Q991	F-10
Q992	F-10
Q993	F-10
Q994	F-10

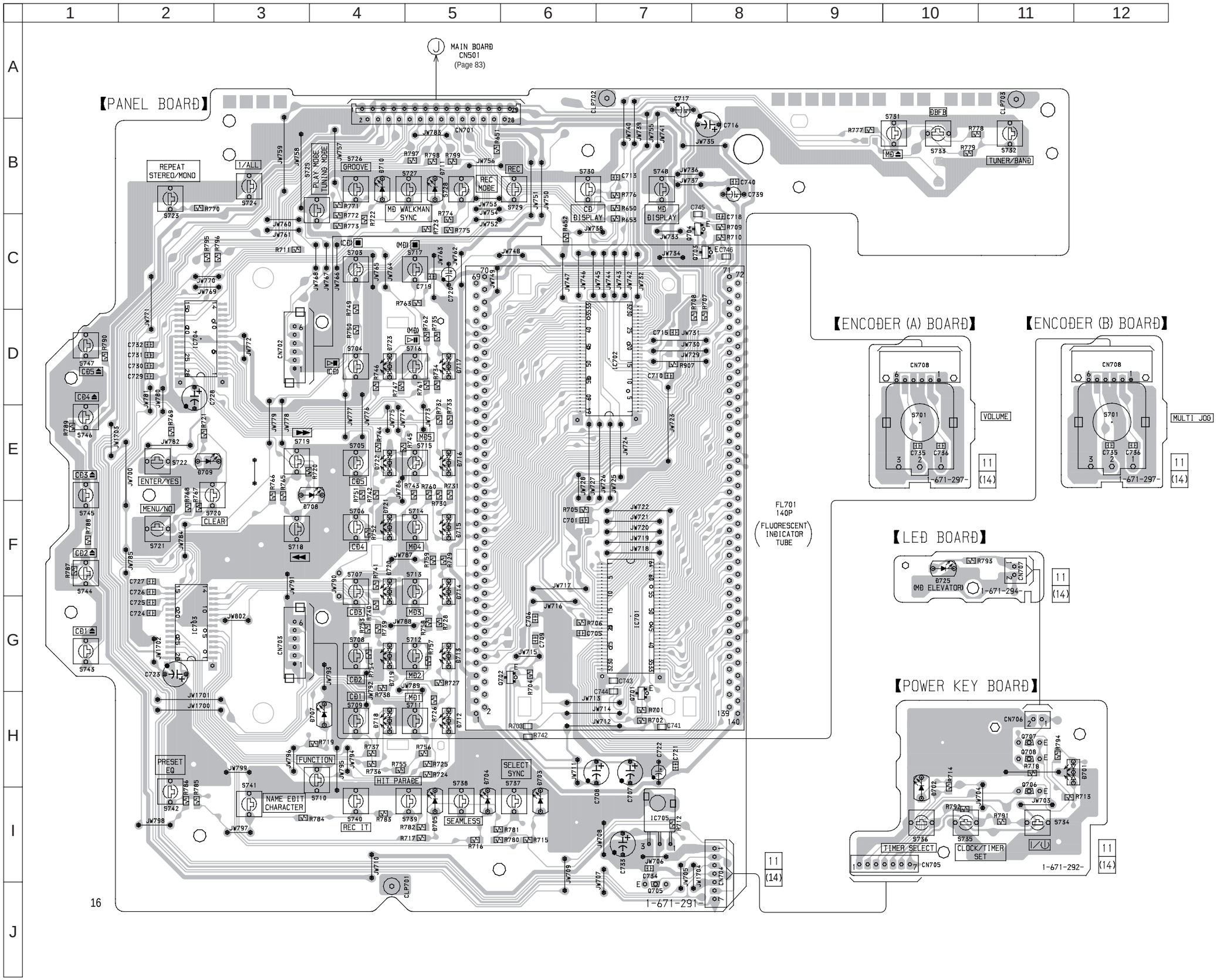
7-20. SCHEMATIC DIAGRAM — PANEL SECTION —

• Refer to page 110 for IC Block Diagrams.



7-21. PRINTED WIRING BOARD — PANEL SECTION —

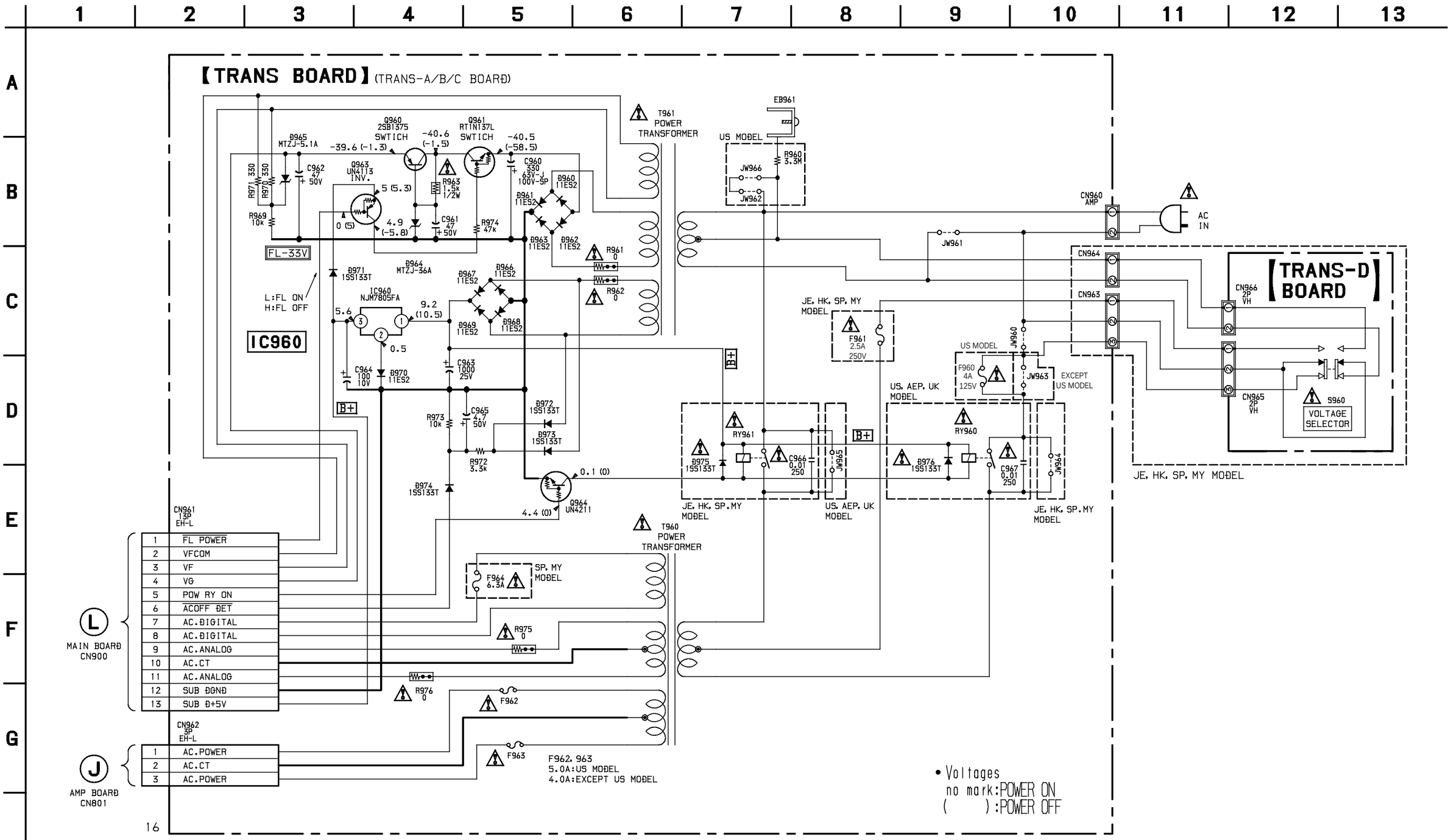
• Refer to page 61 for Circuit Boards Location.



• **Semiconductor Location**

Ref. No.	Location
D701	H-12
D702	H-10
D703	H-6
D704	I-5
D705	I-5
D707	H-3
D708	F-3
D709	D-2
D710	B-4
D711	B-5
D712	H-5
D713	G-5
D714	F-5
D715	F-5
D716	E-5
D717	D-5
D718	H-4
D719	G-4
D720	F-4
D721	F-4
D722	E-4
D723	D-4
D724	B-10
D725	B-10
IC701	G-7
IC702	D-7
IC703	G-2
IC704	D-2
IC705	I-7
Q701	G-7
Q702	G-6
Q703	C-8
Q704	C-8
Q705	I-7
Q706	H-11
Q707	H-11
Q708	H-11

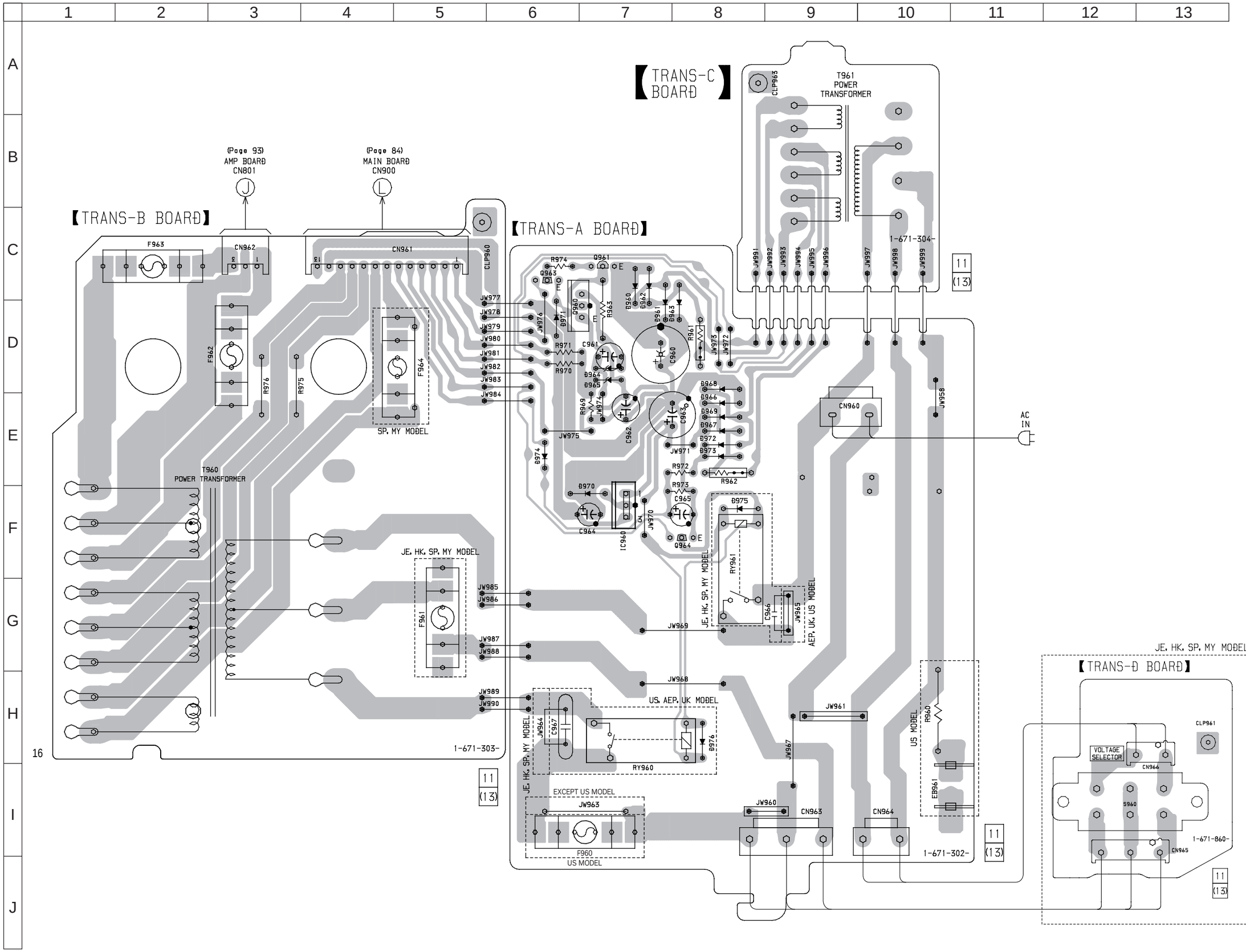
7-22. SCHEMATIC DIAGRAM — POWER SECTION —



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

7-23. PRINTED WIRING BOARD — POWER SECTION —

• Refer to page 61 for Circuit Boards Location.



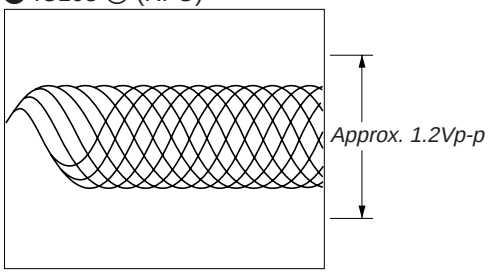
• **Semiconductor Location**

Ref. No.	Location
D960	C-7
D961	C-7
D962	C-7
D963	C-8
D964	D-7
D965	D-7
D966	D-8
D967	E-8
D968	D-8
D969	D-8
D970	E-7
D971	C-6
D972	E-8
D973	E-8
D974	E-6
D976	H-8
IC960	F-7
Q960	C-6
Q961	C-7
Q963	C-6
Q964	F-8

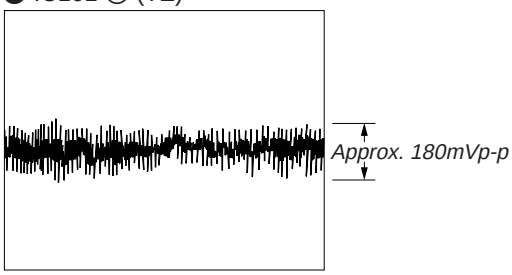
• **Waveforms**

— BD (CD) Section —

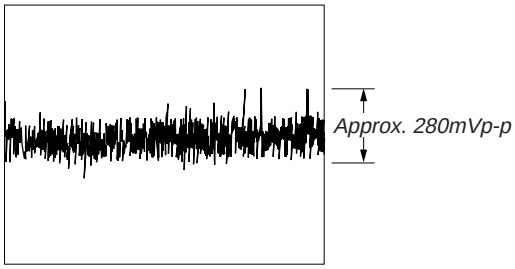
❶ IC103 ⑯ (RFO)



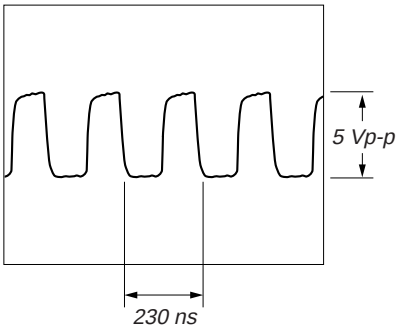
❷ IC101 ㊶ (TE)



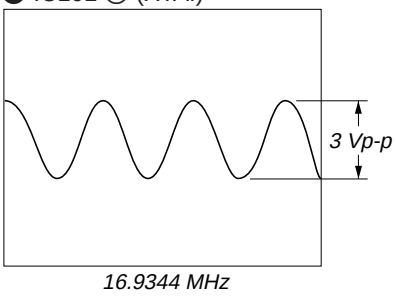
❸ IC101 ㊴ (FE)



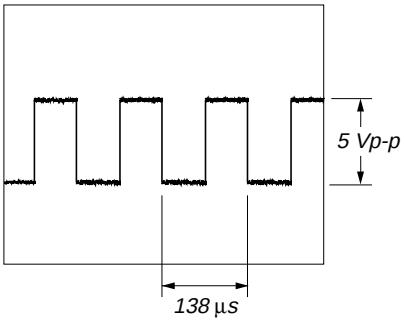
❹ IC101 ⑰ (XPCK)



❺ IC101 ㊻ (XTAI)

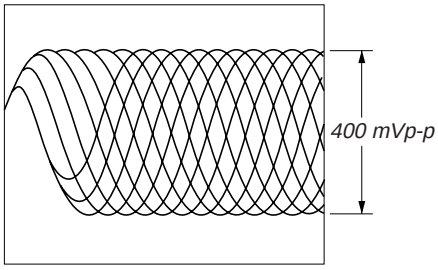


❻ IC101 ⑮ (WFCK)

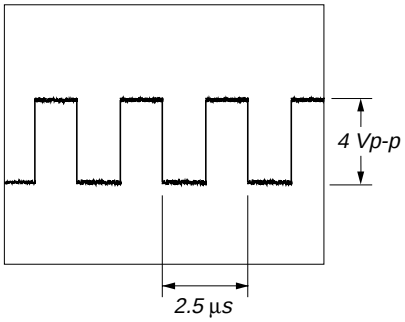


— BD (MD) Section —

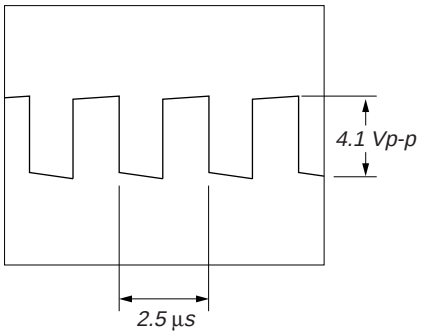
❶ IC101 ㊳ (RF) (MD PLAY)



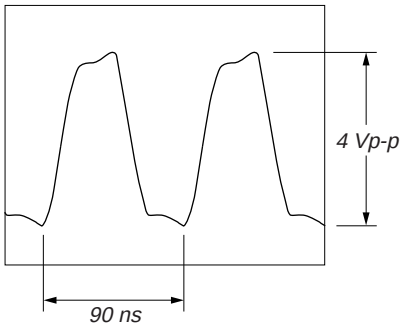
❷ IC152 ㉜ (CAPA –) (MD PLAY)



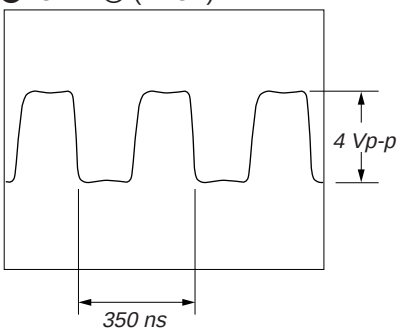
❸ IC152 ㉛ (CAPA +) (MD PLAY)



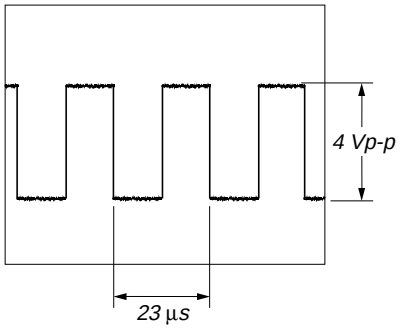
❹ IC121 ㉙ (FS256)



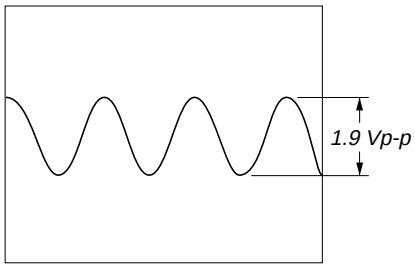
❺ IC121 ㉘ (XBCK)



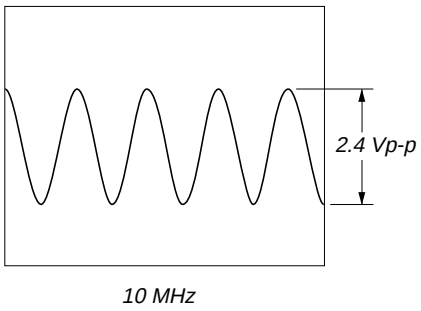
❻ IC121 ㉗ (LRCK)



❼ IC121 ⑯ (OSCI)

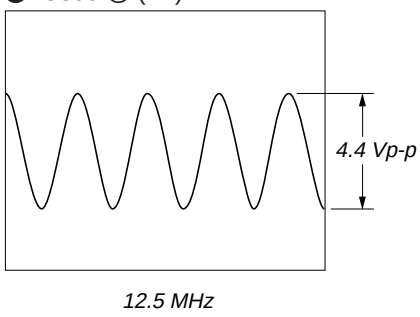


❽ IC316 ⑮ (XIN)

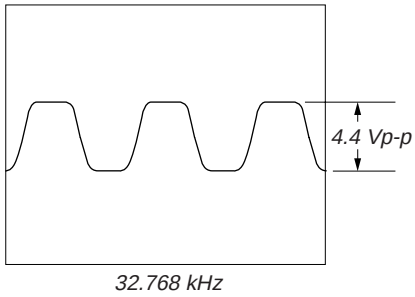


— MAIN Section —

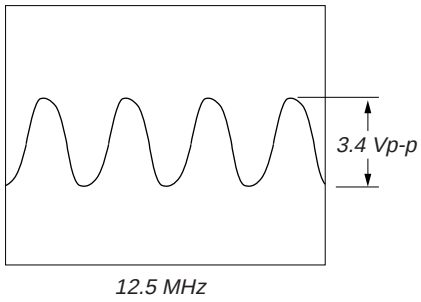
❶ IC300 ㊳ (X2)



❷ IC500 ㊶ (XT2)



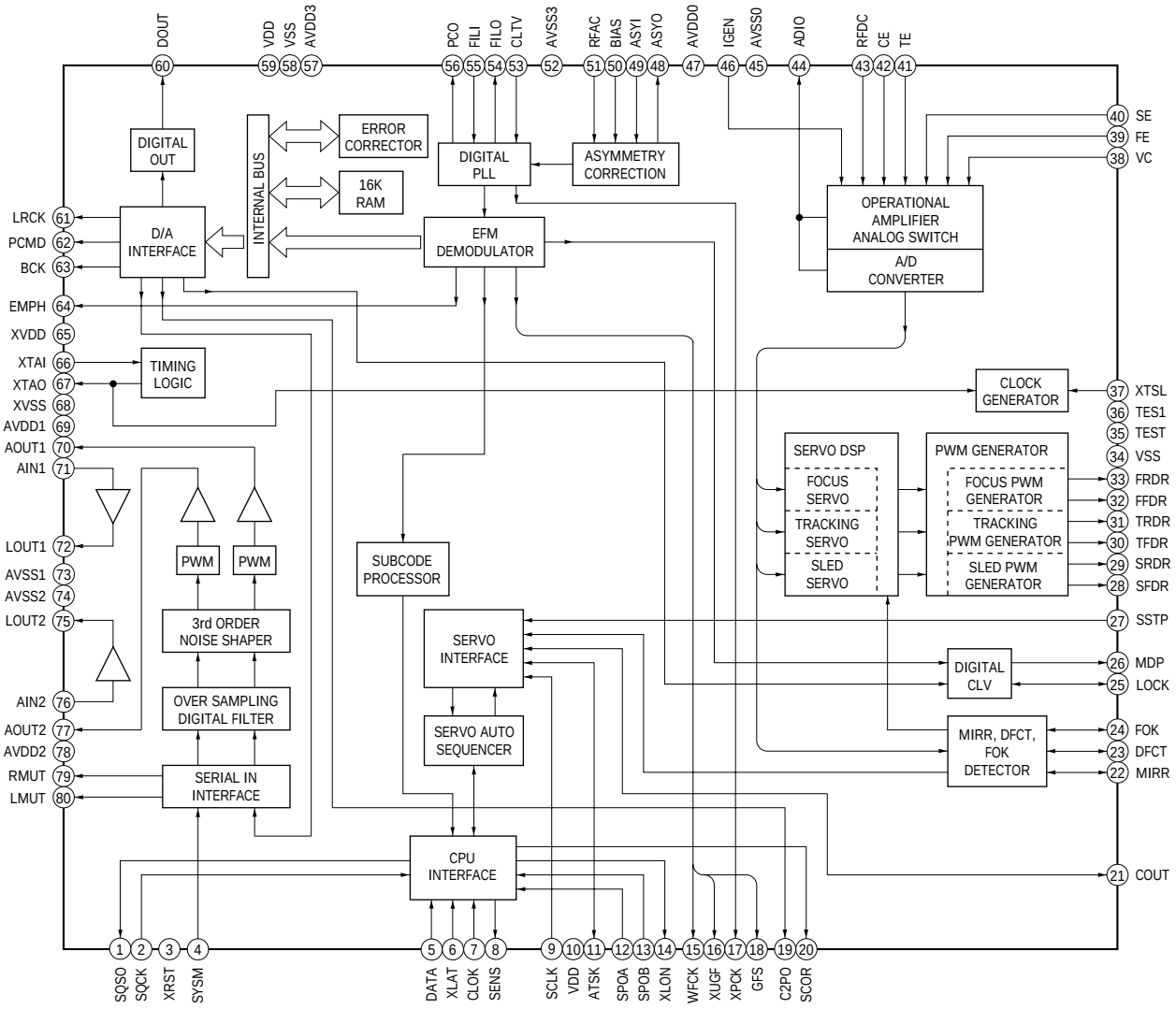
❸ IC500 ㊳ (X2)



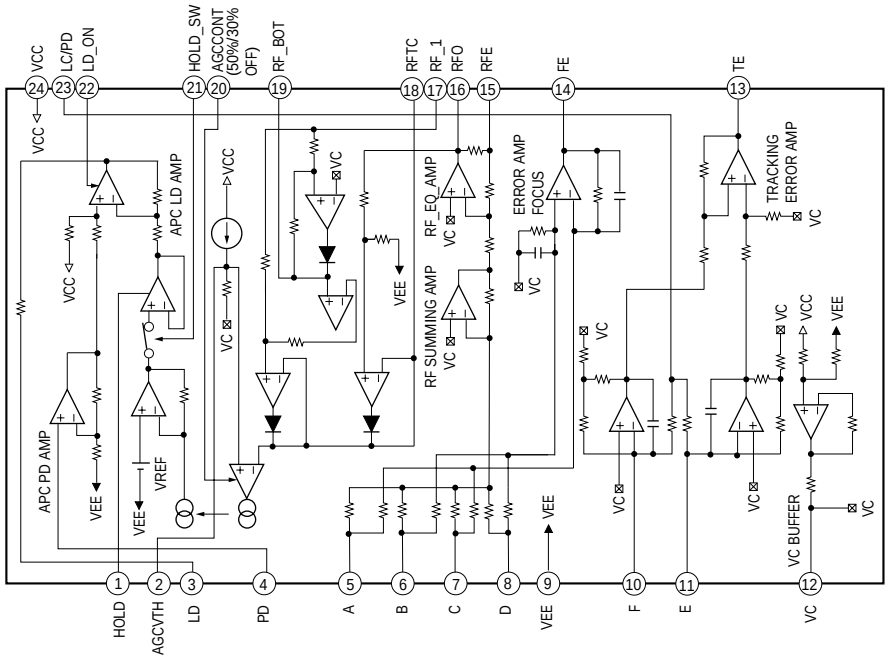
7-24. IC BLOCK DIAGRAMS

— BD (CD) Section —

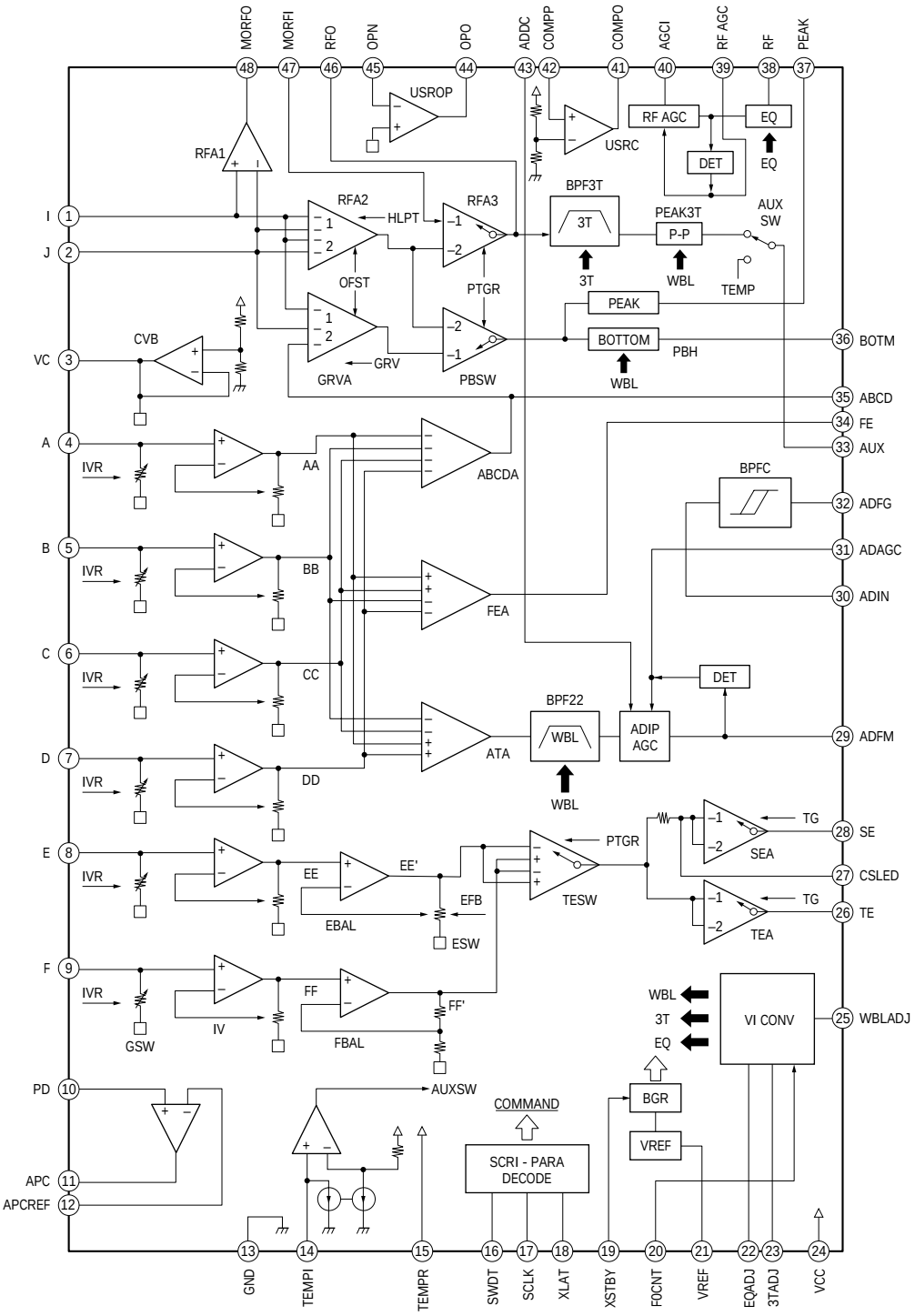
IC101 CXD2587Q



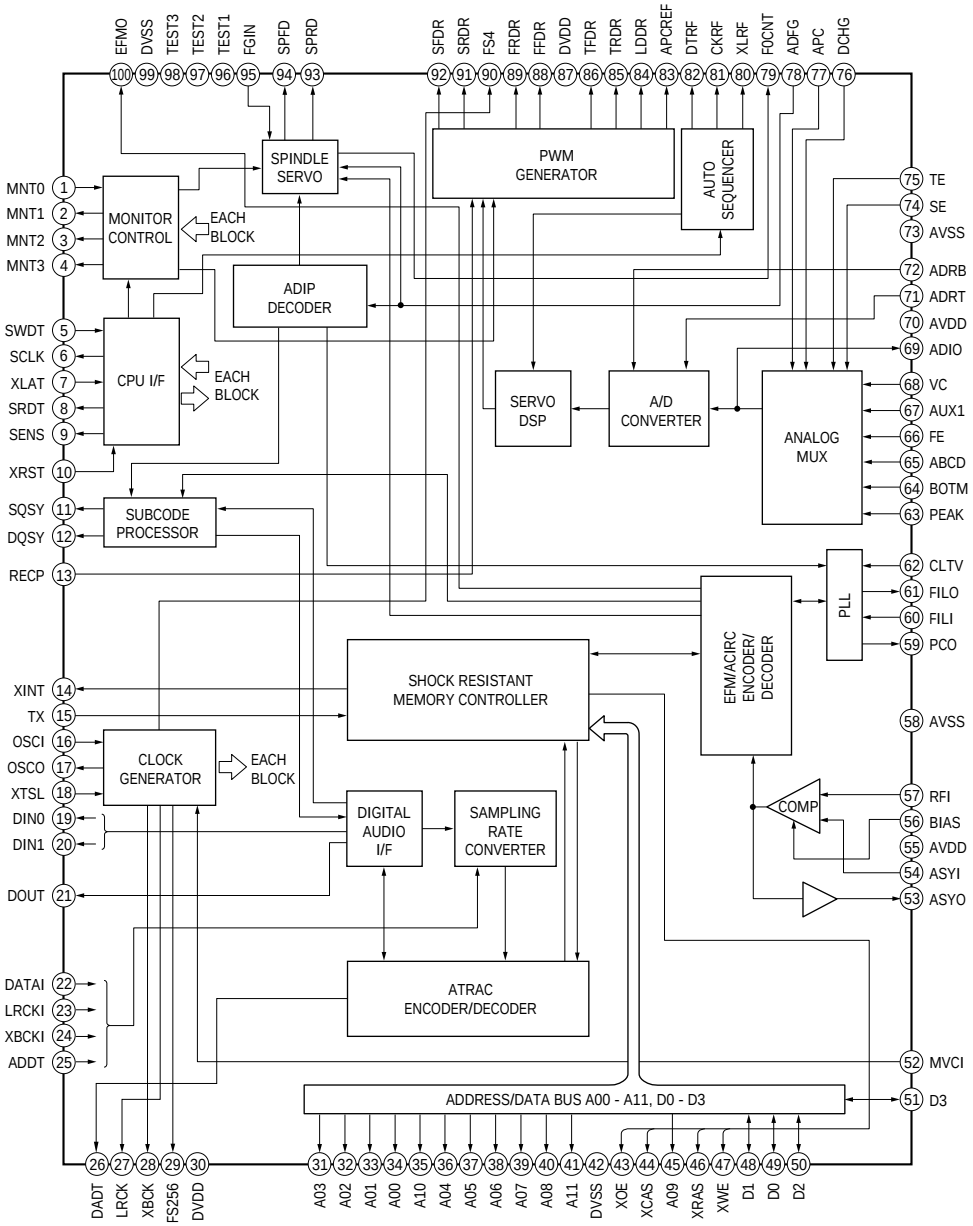
IC103 CXA2568M-T6



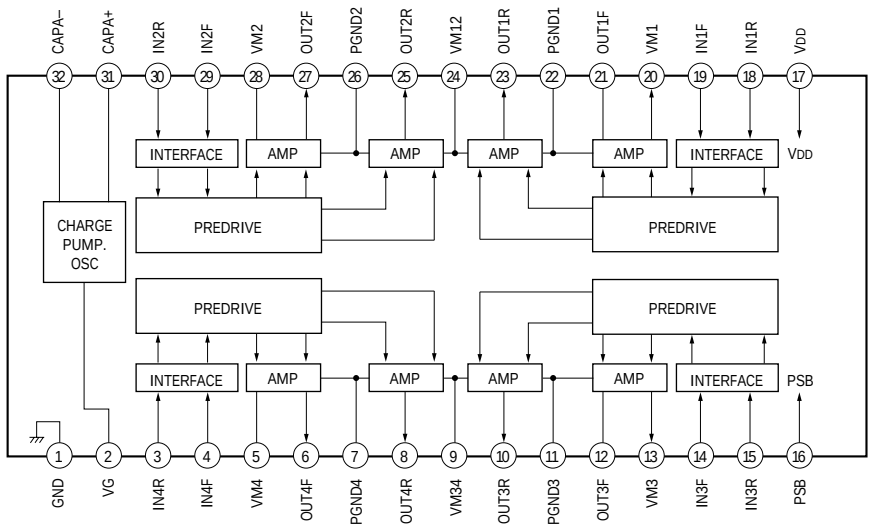
IC101 CXA2523AR



IC121 CXD2654R

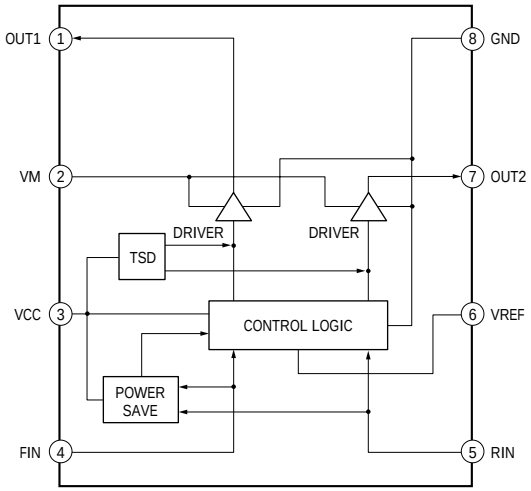


IC152 BH6511FS-E2

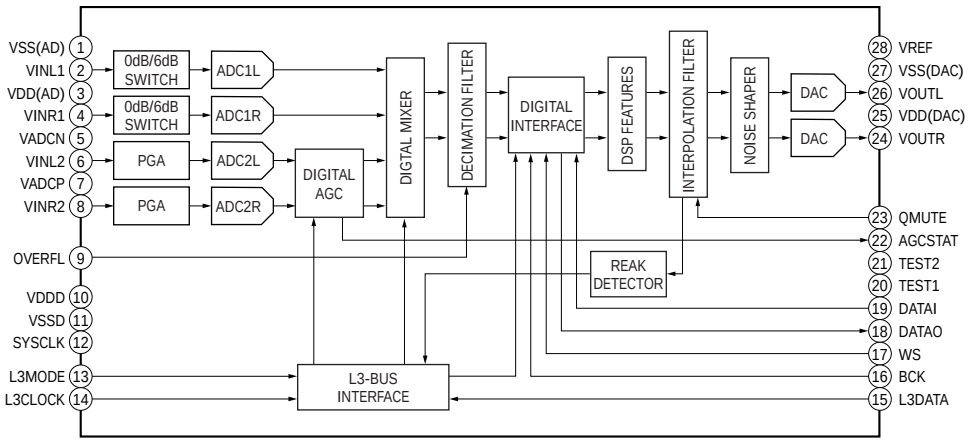


— BD (MD) Section —

IC172 BA6287F (BD (MD) Section),
IC550, 551 BA6287F (MECH RELAY Section)

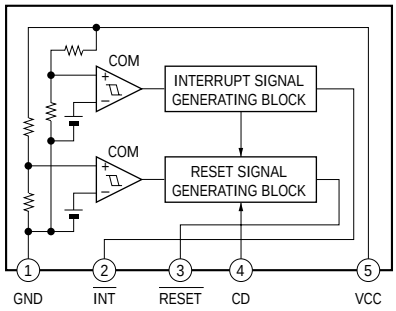


IC201 UDA1341TS/N2 (BD (MD) Section)

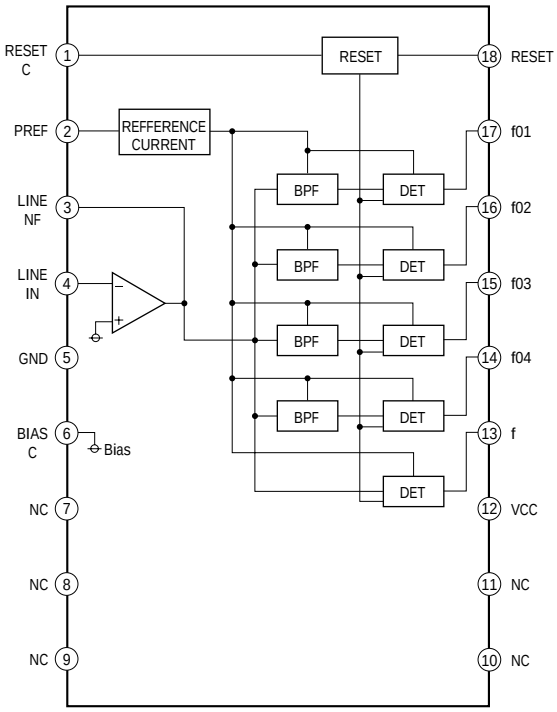


— MAIN Section —

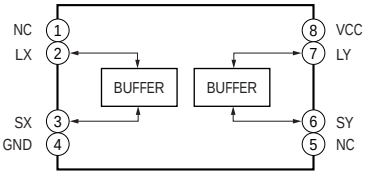
IC400 M62016L



IC502 BA3833F-E2

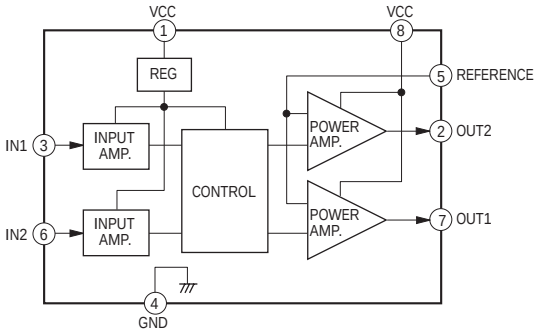


IC504 P82B715TD



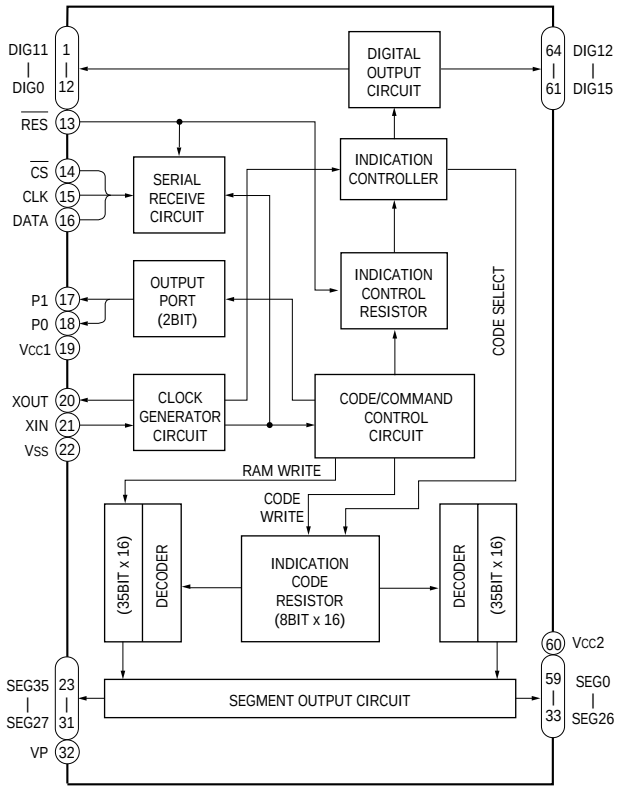
— CLAMP MOTOR Section / LAD MOTOR Section —

IC701 M54641L (CLAMP MOTOR Section),
IC702 M54641L (LAD MOTOR Section)



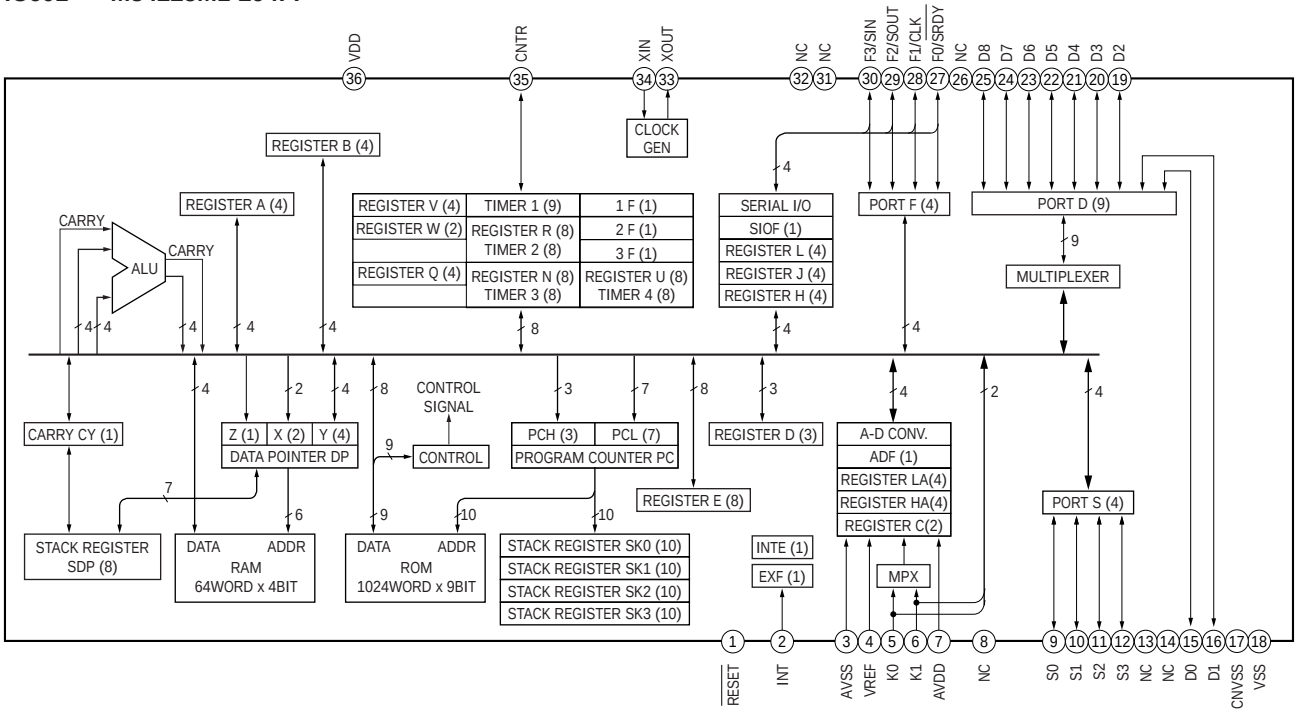
— PANEL Section —

IC701, 702 M66004M8FP



— RDS Section —

IC601 M34225M1-294FP



7-25. IC Pin Function Description

• IC101 Digital Signal Processor (CXD2587Q) (BD (CD) Board)

Pin No.	Pin Name	I/O	Description
1	SQSO	O	SubQ 80-bit, PCM peak and level data output CD TEXT data output
2	SQCK	I	Clock input to read out SQSO
3	XRST	I	System reset. "L": reset
4	SYSM	—	Connected to ground terminal
5	DATA	I	Serial data input from CPU
6	XLAT	I	Latch input from CPU. Serial data is latch at rise-up
7	CLOK	I	Serial data transfer clock input from CPU
8	SENS	O	SENS output. Output to CPU
9	SCLK	I	Clock input to read the SENS serial data
10	VDD	—	Power supply
11	ATSK	I	Input/output for anti-shock (connected to ground terminal)
12	SPOA	—	Not used (fixed at "L")
13	SPOB	—	Not used (fixed at "L")
14	XLON	O	Laser diode switch output
15	WFCK	O	WFCK output
16	XUGF	O	XUGF output. MNT0, RFCK output when selected command
17	XPCK	O	XPCK output. MNT1 output when selected command
18	GFS	O	GFS output MNT2, XROF output when selected command
19	C2PO	O	C2PO output MNT3, GTOP output when selected command
20	SCOR	O	"H" output when either subcode sync S0 or S1 is detected. (Not used)
21	COUT	I/O	Number of tracks counting signal input/output
22	MIRR	I/O	Mirror signal input/output
23	DFCT	I/O	Defect signal input/output
24	FOK	I/O	Focus OK signal input/output
25	LOCK	I/O	GFS is sampled by 460 Hz. "H" output when GFS is "H". "L" output when GFS is "L" eight times continuously. Input mode when LKIN = "1"
26	MDP	O	Spindle motor servo control output
27	SSTP	—	Disc innermost circumference detection signal input
28	SFDR	O	Sled drive output
29	SRDR	O	
30	TFDR	O	Tracking drive output
31	TRDR	O	
32	FFDR	O	Focus drive output
33	FRDR	O	
34	VSS	—	Ground terminal
35	TEST	I	TEST terminals. Normally grounded terminal
36	TES1	I	
37	XTSL	I	Connected to ground terminal
38	VC	I	Center point voltage input
39	FE	I	Focus error signal input
40	SE	I	Sled error signal output

Pin No.	Pin Name	I/O	Description
41	TE	I	Tracking error signal input
42	CE	I	Center point servo analog input
43	RFDC	I	RF signal input
44	ADIO	O	TEST terminal (not used)
45	AVSS0	—	Analog ground terminal
46	IGEN	I	Constant current input for OP amplifier
47	AVDD0	—	Analog power supply
48	ASYO	O	EFM full-swing output (L = Vss, H = VDD)
49	ASYI	I	Asymmetry comparate voltage input
50	BIAS	I	Asymmetry circuit constant current input
51	RFAC	I	EFM signal input
52	AVSS3	—	Analog ground terminal
53	CLTV	I	VCO1 control voltage input for multiplication
54	FILO	O	Filter output (slave = digital PLL) for master PLL
55	FILI	I	Filter input for master PLL
56	PCO	O	Charge pump output for master PLL
57	AVDD3	—	Analog power supply
58	VSS	—	Ground terminal
59	VDD	—	Power supply
60	DOUT	O	Digital-Out output terminal
61	LRCK	O	D/A interface. LR clock output. f = Fs
62	PCMD	O	D/A interface. Serial data output. (2's complement, MSB first)
63	BCK	O	D/A interface. Bit clock output
64	EMPH	O	"H" output when playback disc has emphasis. "L" output when playback disc has no emphasis. (Not used)
65	XVDD	I	Oscillation circuit power supply
66	XTAI	I	Crystal oscillation circuit input terminal When master clock is input from external source it is input from this terminal
67	XTAO	O	Crystal oscillation circuit output terminal (not used)
68	XVSS	—	Oscillation circuit ground
69	AVDD1	—	Analog power supply
70	AOUT1	O	Analog output L-CH
71	A IN1	I	Analog input L-CH
72	L OUT1	O	LPF output L-CH
73, 74	AVSS1, AVSS2	—	Analog ground terminal
75	L OUT2	O	LPF output R-CH
76	A IN2	I	Analog input R-CH
77	A OUT2	O	Analog output R-CH
78	AVDD2	—	Analog power supply
79	RMUT	I	Not used in the HCD-MD555 (open)
80	LMUT		

• IC101 RF AMPLIFIER, FOCUS/TRACKING ERROR AMPLIFIER (CXA2523AR) (BD (MD) BOARD)

Pin No.	Pin Name	I/O	Description
1	I	I	I-V connected RF signal input (I) from optical pickup
2	J	I	I-V connected RF signal input (J) from optical pickup
3	VC	O	Center point voltage (+ 1.65 V) generation output terminal
4 to 9	A to F	I	Signal input from optical pickup (A to F)
10	PD	I	Light amount monitoring input from the laser diode of optical pickup
11	APC	O	Laser amplifier output to automatic power control circuit
12	APCREF	I	Reference voltage input from CXD2654AR (IC121) for setting laser power
13	GND	—	Ground terminal
14	TEMPI	I	Temperature sensor ground terminal
15	TEMPR	O	Temperature sensor reference voltage output
16	SWDT	I	Write data input from CXD2654AR (IC121)
17	SCLK	I	Serial clock input from CXD2654AR (IC121)
18	XLAT	I	Serial latch signal input from CXD2654AR (IC121)
19	XSTBY	I	Standby signal input terminal L: standby Fixed at “H” in this set
20	F0CNT	I	Center frequency control signal input to the internal filters (BPF22, BPF3T, EQ) from CXD2654AR (IC121)
21	VREF	O	Reference voltage output terminal Not used in this set (open)
22	EQADJ	I	Input signal to set the center frequency of the internal filter (EQ)
23	3TADJ	I	Input signal to set the center frequency of the internal filter (BPF3T)
24	VCC	—	Power supply terminal (+3.3 V)
25	WBLADJ	I	Input signal to set the center frequency of the internal filter (BPF22)
26	TE	O	Tracking error signal output to CXD2654AR (IC121)
27	CSLED	I	External low-pass filter capacitor of the sled error signal is connected to this terminal
28	SE	O	Sled error signal output to CXD2654AR (IC121)
29	ADFM	O	FM signal output of ADIP
30	ADIN	I	ADIP FM signal input with AC coupling
31	ADAGC	I	External AGC capacitor for ADIP is connected to this terminal
32	ADFG	O	ADIP duplex FM signal (22.05 kHz ± 1 kHz) output to CXD2654AR (IC121)
33	AUX	O	Auxiliary signal (I3 signal/temperature signal) output to CXD2654AR (IC121)
34	FE	O	Focus error signal output to CXD2654AR (IC121)
35	ABCD	O	Light amount signal output to CXD2654AR (IC121)
36	BOTM	O	Light amount signal (RF/ABCD) bottom hold output to CXD2654AR (IC121)
37	PEAK	O	Light amount signal (RF/ABCD) peak hold output to CXD2654AR (IC121)
38	RF	O	Playback EFM RF signal output to CXD2654AR (IC121)
39	RFAGC	I	External AGC capacitor for RF is connected to this terminal
40	AGCI	I	RF signal input with AC coupling
41	COMPO	O	User comparator output terminal Not used in this set (open)
42	COMPP	I	User comparator input terminal Not used in this set (Fixed at “L”)
43	ADDC	I	External capacitor for cutting the low frequency range of the ADIP amplifier is connected to this terminal
44	OPO	O	Output to user OP. Not used in this set (open)
45	PON	I	Inverted input from user OP amplifier. Not used in this set (Fixed at “L”)
46	RFO	O	RF signal output terminal
47	MORFI	I	MO RF signal input with AC coupling
48	MORFO	O	MO RF signal output terminal

- **IC121 DIGITAL SIGNAL PROCESSOR, DIGITAL SERVO SIGNAL PROCESSOR, EFM/ACIRC ENCODER/DECODER, SHOCK PROOF MEMORY CONTROLLER, ATRAC ENCODER/DECODER) (CXD2654AR) (BD (MD) BOARD)**

Pin No.	Pin Name	I/O	Description
1	MNT0 (FOK)	O	Focus OK signal output to the MD mechanism controller (IC316). "H" is output when focus is on ("L": NG)
2	MNT1 (SHCK)	O	Track jump detection signal output to the MD mechanism controller (IC316)
3	MNT2 (XBUSY)	O	Busy signal output to the MD mechanism controller (IC316)
4	MNT3 (SLOC)	O	Monitor signal output to the MD mechanism controller (IC316)
5	SWDT	I	Write data input from the MD mechanism controller (IC316)
6	SCLK	I	Serial clock input from the MD mechanism controller (IC316)
7	XLAT	I	Serial latch signal input from the MD mechanism controller (IC316)
8	SRDT	O(3)	Read data output to the MD mechanism controller (IC316)
9	SENS	O(3)	Internal status (SENSE) output to the MD mechanism controller (IC316)
10	XRST	I	Reset signal input from the MD mechanism controller (IC316). "L": reset
11	SQSY	O	Subcode Q sync (SCOR) output to the MD mechanism controller (IC316). "L" is output every 13.3 mseconds. "H" is output in most cases
12	DQSY	O	Subcode Q sync (SCOR) output of the DIGITAL-IN U-bit CD format to the MD mechanism controller (IC316). "L" is output every 13.3 mseconds. "H" is output in most cases
13	RECP	I	Laser power select signal input from the MD mechanism controller (IC316). "H": record mode, "L": playback mode
14	XINT	O	Interrupt status output to the MD mechanism controller (IC316)
15	TX	I	Record data output enable signal input from the MD mechanism controller (IC316). Write data transfer timing is input. (Also serves as the magnetic head on/off output)
16	OSCI	I	System clock (512Fs = 22.5792 MHz) input
17	OSCO	O	System clock (512Fs = 22.5792 MHz) input (open in this set)
18	XTSL	I	Input signal for setting the system clock frequency. "L": 45.158 MHz, "H": 22.5792 MHz. Fixed at "H" in this set
19, 20	DINO, DINI	I	Digital audio input signal for recording. (Either digital signal or optical input from CD is selected in this set.) (DIN1 is not used in this set)
21	DOUT	O	Digital audio signal output during playback mode (for DIGITAL OUTPUT). Not used in this set (open)
22	DADTI	I	Not used in this set (open)
23	LRCKI		
24	XBCKI		
25	ADDT	I	Record data input from A/D, D/A converter (IC201)
26	DADT	O	Playback data output to A/D, D/A converter (IC201)
27	LRCK	O	L/R sampling clock signal (44.1 kHz) output to the A/D, D/A converter (IC201)
28	XBCK	O	Bit clock signal (2.8224 MHz) output to serial input/output data to the A/D, D/A converter (IC201)
29	FS256	O	Clock signal (11.2896 MHz) output to the A/D, D/A converter (IC201)
30	DVDD	—	Power supply terminal (+3.3 V) (digital system)
31 to 34	A03 to A00	O	Address output to the D-RAM (IC124)
35	A10	O	Address output to external D-RAM. Not used in this set (open)
36 to 40	A04 to A08	O	Address output to D-RAM (IC124)
41	A11	O	Address output to external D-RAM. Not used in this set (open)
42	DVSS	—	Ground terminal (digital system)
43	XOE	O	Output enable signal output to D-RAM (IC124)

* The numeral 3 in parenthesis (3) in the I/O column means tri-state output. The letter (A) in the I/O column means the monitor output during analog output mode.

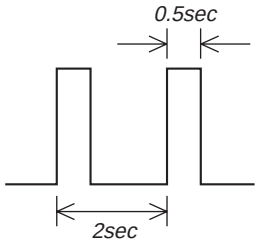
Pin No.	Pin Name	I/O	Description
44	XCAS	O	Column address strobe signal output to the D-RAM (IC124)
45	A09	O	Address output to the D-RAM (IC124)
46	XRAS	O	Row address strobe signal output to the D-RAM (IC124)
47	XWE	O	Write enable signal output to the D-RAM (IC124)
48 to 51	D1 to D3	I/O	Bi-directional data bus for the D-RAM (IC124)
52	MVCI	I	Oscillation input from the external VCO for DIGITAL IN PLL. Not used in this unit (fixed at “L”)
53	ASYO	O	Playback EFM full-swing output
54	ASYI	I(A)	Playback EFM asymmetry comparate voltage input
55	AVDD	—	Power supply terminal (+3.3 V) (analog system)
56	BIAS	I(A)	Playback EFM asymmetry circuit constant current input
57	RFI	I(A)	Playback EFM RF signal input from the CXA2523R (IC101)
58	AVSS	—	Ground terminal (analog system)
59	PCO	O(3)	Phase comparison output to master clock of the master PLL of record/playback EFM system
60	FILI	I(A)	Filter input to master clock of the master PLL of record/playback EFM system
61	FILO	O(A)	Filter output to master clock of the master PLL of record/playback EFM system
62	CLTV	I(A)	Control voltage input to internal VCO of the master PLL of the recording/playback EFM
63	PEAK	I(A)	Light amount signal (RF/ABCD) peak-hold input from the CXA2523AR (IC101)
64	BOTM	I(A)	Light amount signal (RF/ABCD) bottom-hold input from the CXA2523AR (IC101)
65	ABCD	I(A)	Light amount signal input from the CXA2523AR (IC101)
66	FE	I(A)	Focus error signal input from the CXA2523AR (IC101)
67	AUX1	I(A)	Auxiliary signal (I3 signal/temperature signal) input from the CXA2523AR (IC101)
68	VC	I(A)	Center point voltage (+1.65 V) input from the CXA2523AR (IC101)
69	ADIO	O(A)	Monitor output of the A/D converter input signal. Not used in this set
70	AVDD	—	Power supply terminal (+3.3 V) (analog system)
71	ADRT	I(A)	A/D converter operation range’s upper limit voltage input (fixed at “H” in this set)
72	ADRB	I(A)	A/D converter operation range’s lower limit voltage input (fixed at “L” in this set)
73	AVSS	—	Ground terminal (analog system)
74	SE	I(A)	Sled error signal input from the CXA2523AR (IC101)
75	TE	I(A)	Tracking error signal input from the CXA2523AR (IC101)
76	DCHG	I(A)	Connected to the +3.3 V power supply
77	TEST4	I(A)	Not used in this set (fixed at “H”)
78	ADFG	I	ADIP duplex FM signal (22.05 kHz Å} 1 kHz) input from the CXA2523AR (IC101)
79	F0CNT	O	Filter f0 control signal output to the CXA2523AR (IC101)
80	XLRF	O	Serial latch signal output to the CXA2523AR (IC101)
81	CKRF	O	Serial clock signal output to the CXA2523AR (IC101)
82	DTRF	O	Write data output to the CXA2523AR (IC101)
83	APCREF	O	Signal output that controls the reference voltage generator circuit of the laser automatic power control and is output to the CXA2523AR (IC101)
84	TEST0	I	Not used in this set
85	TRDR	O	Tracking servo drive PWM signal (–) output to the BH6511FS (IC152)

* The numeral 3 in parenthesis (3) in the I/O column means tri-state output. The letter (A) in the I/O column means the monitor output during analog output mode.

Pin No.	Pin Name	I/O	Description
86	TFDR	O	Tracking servo drive PWM signal (+) output to the BH6511FS (IC152)
87	DVDD	—	Power supply terminal (+3.3 V) (digital system)
88	FFDR	O	Focus servo drive PWM signal (+) output to the BH6511FS (IC152)
89	FRDR	O	Focus servo drive PWM signal (–) output to the BH6511FS (IC152)
90	FS4	O	Clock signal (176.4 kHz) output terminal (X'tal system). Not used in this set (open)
91	SRDR	O	Sled servo drive PWM signal (–) output to the BH6511FS (IC152)
92	SFDR	O	Sled servo drive PWM signal (+) output to the BH6511FS (IC152)
93	SPRD	O	Spindle servo drive PWM signal (–) output to the BH6511FS (IC152)
94	SPFD	O	Spindle servo drive PWM signal (+) output to the BH6511FS (IC152)
95	FGIN	I	FG signal output. Not used in this set (fixed at "L")
96	TEST1	I	TEST input terminals (fixed at "L")
97	TEST2		
98	TEST3		
99	DVSS	—	Ground terminal (digital system)
100	EFMO	O	The record EFM signal output to the over-write head driver (IC181)

• **IC316 MD MECHANISM CONTROLLER (M30624MG-205C) (BD (MD) BOARD)**

Pin No.	Pin Name	I/O	Description
1	WMOUT	O	Data output to the MD WALKMAN
2	WMCLK	I	Clock input from the MD WALKMAN
3	LEVEL-L	O	L-CH level output
4	LEVEL-R	O	R-CH level output
5	LEDDATA	O	Data output to LED display. Not used in this set
6	—	—	
7	LEDCLK	O	Clock output to LED display. Not used in this set
8	BYTE	I	Input signal selecting the external bus data width of the master controller (IC500). Not used in this set (fixed at "L")
9	CNVSS	—	Ground terminal
10	XIN-T	O	Sub system clock input terminal. Not used in this unit (pull down)
11	XOUT-T	O	Sub system clock output terminal. Not used in this unit (pull down)
12	S. RST	I	System reset signal input from the reset signal generator (IC400) "L": reset. "L" is input about several hundred milliseconds after the power is turned on, then this terminal changesto "H"
13	XOUT	O	Main system clock output terminal (7 MHz)
14	GND	—	Ground terminal
15	XIN	I	Main system clock input terminal (7 MHz)
16	+3.3V	—	Power supply terminal (+3.3 V)
17	NMI	I	NMI input. Not used in this unit (fixed at "H")
18	P.DOWN	I	Power down detection input terminal. "L" is input when voltage decreases
19	WMSYNC	I	Sync input from the MD WALKMAN
20	12CBUSY	I	I2C bus busy signal output
21	L3 CLK	O	L3 bus clock output
22	L3 DATA	O	L3 bus data output
23	—	O	
24	ELEUP	O	Elevator-up signal output
25	—	O	
26	ELEDOWN	O	Elevator down signal output
27	SQSY	I	Subcode Q sync (SCOR) input from CXD2654AR (IC121). "L" is output every 13.3 mseconds. "H" is output in most cases
28	RESET SW	I	Reset input
29	12CCLK	I/O	I2C bus clock input/output
30	12CDATA	I/O	I2C bus data input/output
31	FLDATA	O	Serial data output for display. Not used in this set (open)
32	—	O	Not used in this set (open)
33	FLCLK	O	Serial clock output for display Not used in this set (open)
34	FLCS	O	Chip select signal output for display Not used in this set (open)
35	SWDT	O	Write data output to CXD2654AR (IC121)
36	SRDT	I	Read data input from CXD2654AR (IC121)
37	SCLK	O	Serial clock output to CXD2654AR (IC121)
38	OPTSEL0	O	Not used in this set (open)
39	SENSOR	I	Elevator position sensor input (main)
40	SENSOR2	I	Elevator position sensor input (sub)

Pin No.	Pin Name	I/O	Description
41	HEAD DOWN	O	Over-write head UP/DOWN motor (M905) control signal output. *1
42	HEAD UP		
43	JOG0	I	JOG dial pulse input from rotary encoder. Not used in this set (pull up)
44	JOG1		
45	WMINV	O	Output signal to invert phase of the clock input from the MD WALKMAN
46	LEDLAT	O	Data latch signal output to LED display. Not used in this set
47	POTSEL1	O	Not used in this set (open)
48	DA RST	O	Reset control signal output to the A/D, D/A converter. Not used in this set (open)
49	MUTE	O	Not used in this set (pull down)
50	STB	O	Power control signal output to peripheral devices. Not used in this set (open)
51	CHACK-IN	I	Input from the chucking completion detector switch
52	HOME	I	Hall position detection signal input
53	PACK-OUT	I	Disk pack out detection switch input
54	LDIN	O	Loading motor control signal output
55	LDOUT		
56	LD-LOW	O	Loading motor drive voltage control signal output. Not used in this set (open)
57	LDON	O	Laser diode ON/OFF control signal output to the automatic power control circuit. "H": laser ON
58	REFLECT	I	Disc reflection rate detection input from the reflection rate detection switch (S682). "H": low reflectance disc, "L": high reflectance disc
59	PROTECT	I	Write protection input from the write protection tab detection switch (S683). "H": protect
60	PB-P	I	Playback position detection switch input. Not used in this set (open)
61	REC/PB	O	Control signal output of the recording/playback status. Not used in this set (open)
62	3.3V	—	Power supply terminal (+3.3 V)
63	LIMIT IN	I	Sled limit-in detection switch (S681) input. "L": sled limit-in (when the optical pickup comes to the innermost circumference)
64	GND	—	Ground terminal
65	MOD	O	Laser modulation selector signal output to the HF modulation switch circuit During playback power: "H", During stop: "L", During recording power: 
66	XLAT	O	Serial latch signal output to CXD2654AR (IC121)
67	WRPWR	O	Laser power selector signal output to CXD2654AR (IC121) and to the HF modulation switch circuit. "H": recording, "L": playback
68	LOADING SEL:L	I	Not used in this set (pull up)
69	L3MODE	O	L3 bus mode signal output
70	—	I	Not used in this set (pull up)
71	—	I	Not used in this set (fixed at "L")
72	SCTX	O	Record data output enable signal output to CXD2654AR (IC121) and to the over-write head driver (IC181). Write data transfer timing is output. (It also serves as the magnetic head on/off output)
73	XINT	I	Interrupt status input from CXD2654AR (IC121)
74	REC-P	I	Input from the record position detector switch. Not used in this set (pull up)
75	DQSY	I	Subcode Q sync (SCOR) of the DIGITAL-IN U-bit CD format is input from CXD2654AR (IC121). "L" is input every 13.3 mseconds. "H" is input in most cases

Pin No.	Pin Name	I/O	Description
76	—	O	Not used in this set (open)
77	DIG RST	O	Reset signal output to CXD2654AR (IC121) and BH6511FS (IC152). “L”: reset
78	SENS	I	Internal status (SENSE) input from CXD2654AR (IC121)
79	MNT3	I	Monitor signal input from CXD2654AR (IC121)
80	MNT2	I	Busy signal input from CXD2654AR (IC121)
81	MNT1	I	Tracking jump detection signal input from CXD2654AR (IC121)
82	MNT0	I	Focus OK signal input from CXD2654AR (IC121). “H” is input when the focus is on (“L”: NG)
83	SENSOR SW	O	Sensor switch signal output
84 to 86	DISC5,DISC1 DISK2	I	Disc detection signal input
87	SCL	O	Clock signal output to the non-volatile memory (IC171)
88	SDA	I/O	Bi-directional data bus to the non-volatile memory (IC171)
89, 90	DISK4,DISC3	I	Disc detection signal input
91	HEADSW-DOWN	I	Input from the over-write head DOWN position detector switch (S7). “L” is input when the over-write head is at the DOWN position
92	HEADSW-UP	I	Input from the over-write head UP position detector switch (S6). “L” is input when the over-write head is at the UP position
93 to 95	KEY3 to KEY1	I	Key input terminal
96	AVSS	—	Ground terminal
97	KEY0	I	Key input
98	VREF	I	Reference voltage (+3.3 V) input terminal
99	3.3V	—	Power supply terminal (+3.3 V)
100	WMIN	I	Data input from the MD WALKMAN

*1 Overwrite head UP/DOWN motor (M905) control

Operation / Terminal	UP	DOWN	BRAKE	SLIP RUN
HEAD UP (㊷ pin)	“H”	“L”	“H”	“L”
HEAD DOWN (㊶ pin)	“L”	“H”	“H”	“L”

• IC300 CD MECHANISM CONTROLLER (µPD784215AYFGF-501-3BA) (MAIN BOARD)

Pin No.	Pin Name	I/O	Description
1, 2	—	O	Not used in this set (open)
3	$\overline{\text{LEDLAT}}$	O	Serial latch pulse signal output to LED driver. Not used in this set (open)
4	$\overline{\text{DRVCS}}$	O	Chip select signal output to display devices. Not used in this set (open)
5	$\overline{\text{RE}}$	O	Output enable signal output to static RAM (IC302). "L": active
6	$\overline{\text{WE}}$	O	Write enable signal output to static RAM (IC302). "L": active
7	$\overline{\text{DRVRST}}$	O	Reset signal output to display devices. Not used in this set (open)
8	—	O	Not used in this set (open)
9	VDD	—	Power supply terminal (+5 V)
10	$\overline{\text{BDRST}}$	O	Reset signal output to CD section. "L": reset
11	$\overline{\text{BDPWR}}$	O	Power ON/OFF control signal output to the main power (+5 V) of CD section. "L": power ON
12, 13	DRV DAT, DRV CLK	O	Not used in this set (open)
14	$\overline{\text{LOD POS}}$	O	Control signal output to the CD loading motor (M702)
15	$\overline{\text{LOD NEG}}$	O	Control signal output to the CD loading motor (M702)
16	$\overline{\text{CLP POS}}$	O	Control signal output to the CD clamp motor (M701)
17	$\overline{\text{CLP NEG}}$	O	
18	$\overline{\text{OUTSW}}$	I	Input signal from the tray OPEN/CLOSE detect switch (S708) of the CD mechanism deck. "H": tray is closed, "L": tray is open
19	$\overline{\text{INSW}}$	I	Input signal from the tray OPEN/CLOSE detect switch (S704) of the CD mechanism deck section. "H": tray is open, "L": tray is close
20	$\overline{\text{MIDOUT SW}}$	I	Input signal from the detection switch (S701 (MID OUT)) of the CD mechanism deck. "L": When the sub tray is loaded into the stocker
21	$\overline{\text{MIDIN SW}}$	I	Input signal from the detection switch (S703 (MID IN)) of the CD mechanism deck. "L": During the moment when the sub tray moves away from the tray until it is loaded to the stocker
22	TEST	I	TEST input terminal (fixed at "L" in this set)
23 to 25	$\overline{\text{ENCODE0}}$ to $\overline{\text{ENCODE2}}$	I	Input signal from the roatery encoder (S707) of the CD mechanism deck.
26	$\overline{\text{INIT SW}}$	I	Input signal from the detection switch (S705 (INIT)) of the CD mechanism deck. "L": When the tray arrives at the playback position. "H": In others modes
27	$\overline{\text{ADJ}}$	I	Input signal for setting the test mode of the CD section. Usually fixed at "H". ("L": test mode)
28	AMUTE	O	Analog mute control signal output. Not used in this set (open)
29	DATA	O	Serial data output to CXD2587 (IC101) of the CD section
30	CLK	O	Clock signal output for serial data transfer to CXD2587 (IC101) of the CD section
31	$\overline{\text{XLT}}$	O	Serial latch pulse signal output to CXD2587 (IC101) of the CD section
32	$\overline{\text{LID OUT SW}}$	I	Input signal from the detection switch (S702 (LID)) of the tray OPEN/CLOSE from the CD mechanism deck. "L": open, "H": close (during playback, etc.)
33 to 35	—	I/O	Not used in this set (close)
36	$\overline{\text{12CBSY}}$	O	I2 bus busy output
37	VDD	—	Power supply terminal (+5 V)
38	X2	O	Main system clock output (12.5 MHz)
39	X1	I	Main system clock input (12.5 MHz)
40	VSS	—	Ground terminal
41	—	O	Not used in this set (open)
42	XT1	I	Sub system clock input. Not used in this set (fixed at "L")

Pin No.	Pin Name	I/O	Description
43	$\overline{\text{RESET}}$	O	Reset signal input. “L”: reset. The low voltage detection signal is used as reset signal
44	$\overline{\text{12CBSY}}$	I	I2C bus busy input
45	—	O	Not used in this set (close)
46	SCOR	I	Subcode sync (S0+S1) detection signal input from CXD2587Q (IC101) of the CD section
47	—	I	Not used in this set (close)
48	$\overline{\text{AC CUT}}$	O	AC cut-off signal output. “L”: AC OFF
49	JOG0	I	JOG dial pulse input. Not used in this set (fixed at “L”)
50	JOG1	I	JOG dial pulse input. Not used in this set (fixed at “L”)
51	AVDD	—	Power supply terminal (+5 V) (for A/D converter section, analog system)
52	ACREF0	I	Reference voltage (+5 V) input. (for A/D converter)
53 to 55	KEY0 to KEY2	I	KEY input terminal. Not used in this set (fixed at “H”)
56	SELECT0	I	Japanese Kana letters input function enable/disable setting input. “H”: Japanese Kana letters disabled, “L”: Japanese Kana letters enabled (fixed at “L” in this set)
57	SELECT1	I	Input signal setting to enable composite model of CD section with other sections (amplifier, tuner, etc.). “H”: Composite mode. “L”: separate model (fixed at “H” in this set)
58	SELECT2	I	FOCUS/NO DISC is selected at GFS NG during search
59	DISK SENS	I	Input signal from the disc sensor (Q703) of the CD mechanism. “H”: disc is present
60	CNT SW	I	Input signal from the detection switch (S706 (COUNT)) of the CD mechanism deck. “L”: When elevator arrives at each sub-try storing position
61	AVSS	—	Ground terminal (for A/D converter)
62	MECHA JIG	O	Not used (fixed at “L”)
63	CHECK	O	Not used in this set (open)
64	AVREF1	I	Reference voltage (+5 V) input terminal (for A/D converter)
65	—	I	Not used in this set (open)
66	—	—	
67	—	O	
68	SUBQ	I	Subcode Q data input from CXD2587Q (IC101) of the CD section
69	—	—	Not used in this set (open)
70	SQCLK	O	Subcode Q data transfer clock signal output to CXD2587Q (IC 101) of the CD section
71	LPH	O	Laser power control signal output
72	—	I	Not used in this set (open)
73	12CDAT	I/O	I2C bus data input/output
74	SENSE	O	Internal status monitor input from CXA2587Q (IC101) of the CD section
75	12C	O	I2C bus clock signal output
76 to 83	A0 to A7	O	Address output to static RAM (IC302)
84 to 91	D0 to D7	I/O	Bi-directional data bus to static RAM (IC302)
92 to 98	A8 to A14	O	Address output to static RAM (IC302)
99	A15	O	Address output to external device. Not used in this set (open)
100	VSS	—	Ground terminal

• IC500 SYSTEM CONTROL (μPD784215YGF-505-3BA) (MAIN BOARD)

Pin No.	Pin Name	I/O	Description
1 to 5	—	O	Not used in this set (TP501 ~ TP505)
6	OPT SEL CD	O	CD = H
7	STANDBY LED	O	LED control signal output
8	TIMER LED		
9	VDD	—	Power supply terminal
10 to 13	SPEC1 to SPEC4	I	Fixed at “H”
14	EWS-OUT	O	EWS control signal output
15	EWS-IN		
16	EWS-STANDBY		
17	EWS-WARNING		
18	EWS-TEST		
19	IF-NG	O	OK = H. NG = L
20	AM-MONO	O	MONO = H. STEREO = L
21	—	O	Not used in this set
22	TEST	—	Test terminal
23	ENC-VOLA	I	Volume encoder input
24	ENC-VOLB		
25	ENC-JOGA	I	Multi jog encoder input
26	ENC-JOGB		
27	—		Not used in this set
28	—		
29	$\overline{\text{ST-MUTE}}$	O	Mute signal output to tuner
30	$\overline{\text{STEREO}}$	O	Stereo signal output to tuner
31	$\overline{\text{TUNED}}$	O	Tuning signal output to tuner
32	ST-CE	O	Enable signal output to tuner
33	ST-DOUT	O	Data output to tuner
34	ST-DIN	I	Data input for tuner
35	ST-CLK	O	Clock output to tuner
36	—		Not used in this set
37	VDD	—	Power supply terminal
38	X2	I	External crystal is connected to this terminal
39	X1	O	
40	VSS	—	Ground terminal
41	XT2	I	External crystal is connected to this terminal
42	XT1	O	
43	$\overline{\text{RESET}}$	I	Reset input
44	RDS-CLK	O	Clock output
45	RDS-DATA	O	Data output
46	$\overline{\text{AC-CUT}}$	O	AC cutting signal output
47	$\overline{\text{SIRCS}}$	I	Remote control
48	$\overline{\text{PC-PW REQ}}$ / $\overline{\text{YBUSCLKI}}$	I	Y bus clock input
49	YBUSCLKO	O	Y bus clock output
50	YBUSBUSY	O	Y bus busy signal output

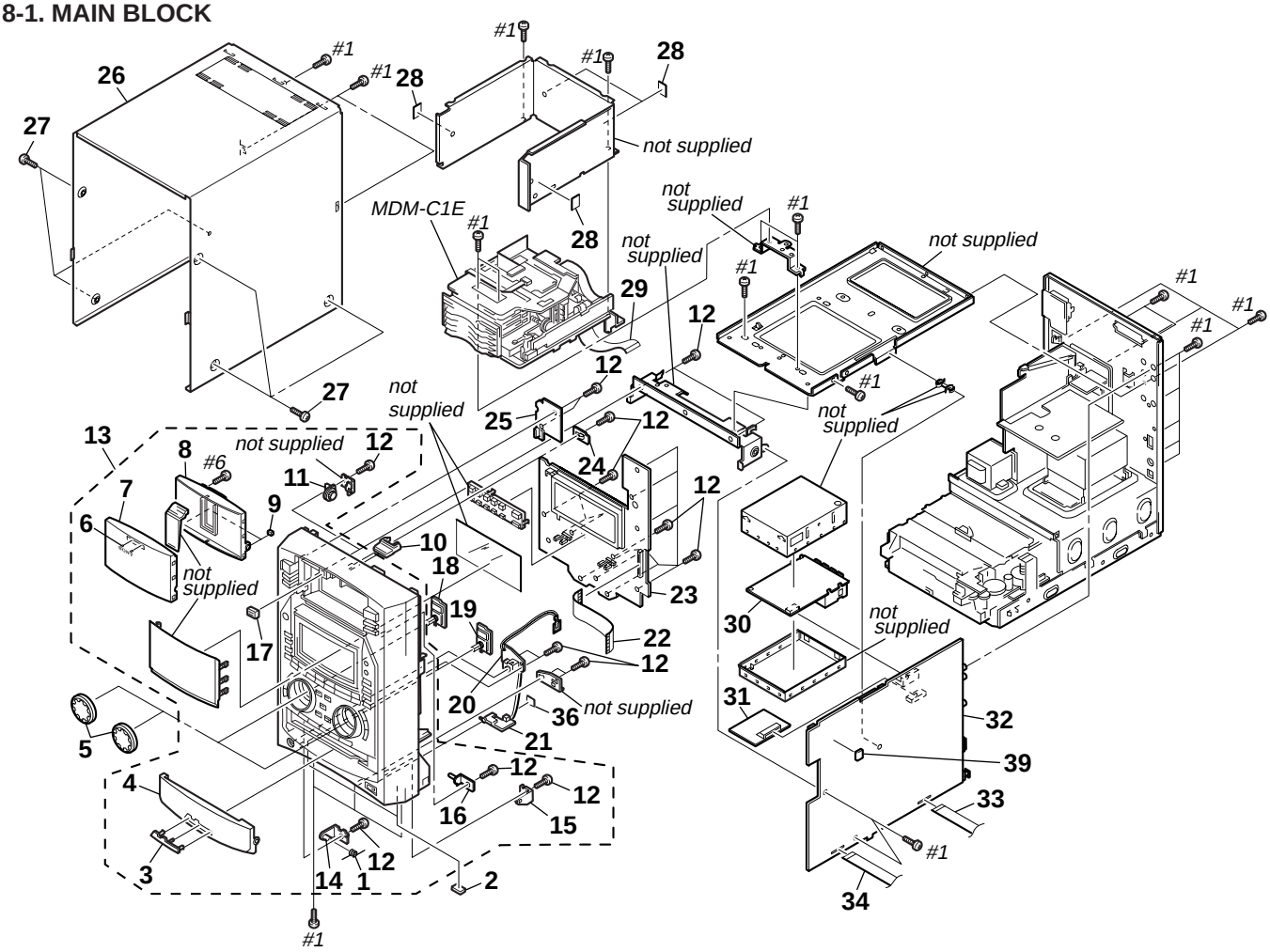
SECTION 8
EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
  HK : Hong Kong
  SP : Singapore
  MY : Malaysia
  JE : Tourist

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

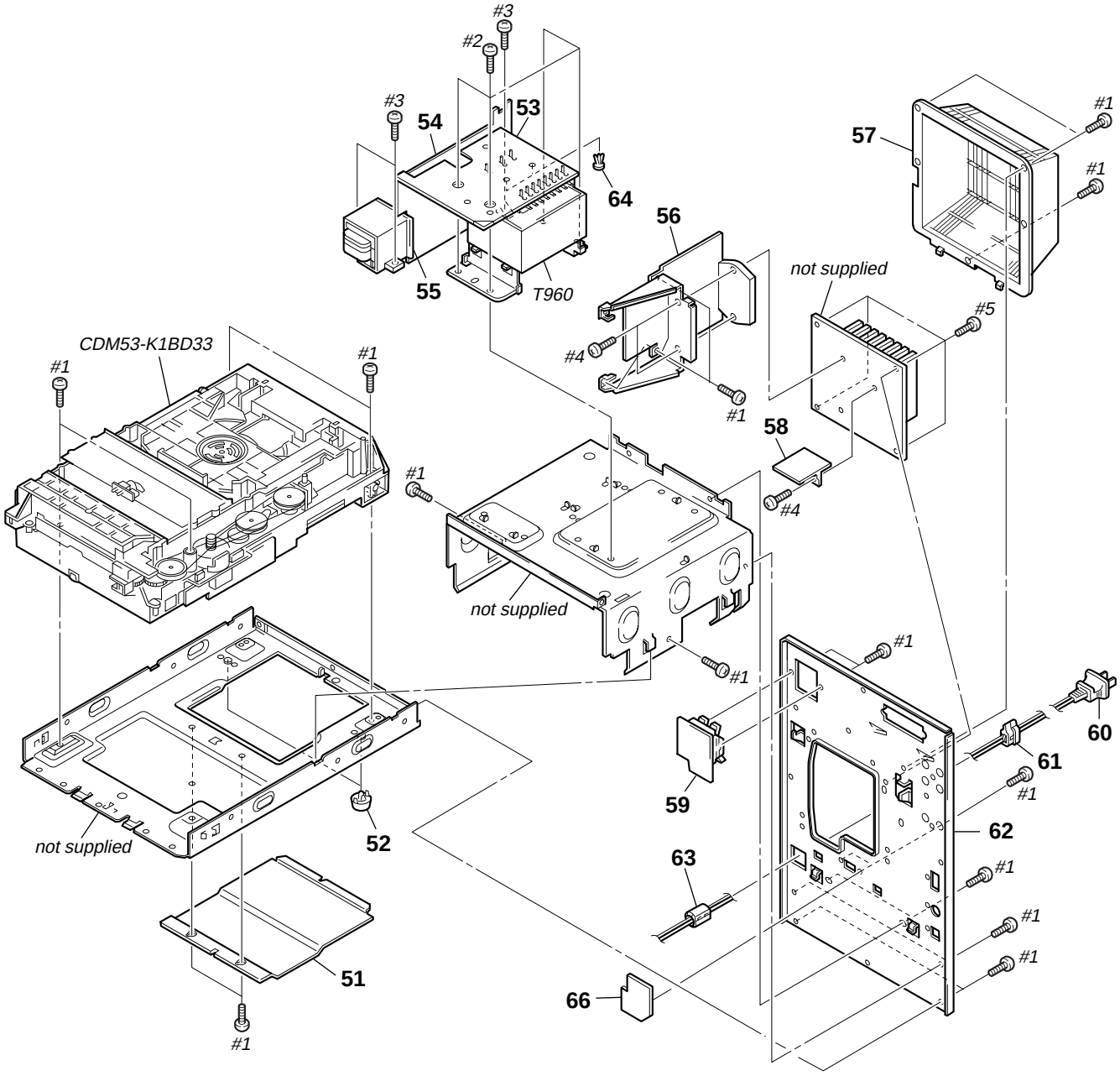
8-1. MAIN BLOCK



Ref. No.	Part No.	Description	Remarks
1	4-212-246-01	SPRING (CD)	
* 2	4-930-336-71	FOOT (FELT)	
3	4-212-239-01	EMBLEM (5MD/5CD)	
4	4-212-228-01	LID (CD)	
5	4-212-225-01	KNOB (JOG)	
6	4-925-161-81	EMBLEM (4-A), SONY	
7	4-212-226-02	LID (MD)	
8	4-212-227-02	BASE (LID)	
9	4-989-453-11	CUSHION (LID)	
10	4-212-247-01	PLATE, LIGHT GUIDE	
11	3-354-963-21	DAMPER	
12	4-951-620-01	SCREW (2.6 × 8), +BVTP	
13	X-4950-345-1	PANEL ASSY, FRONT (JE,US,HK,SP,MY)	
13	X-4950-420-1	PANEL ASSY, FRONT (AEP,UK)	
14	X-4950-325-1	BRACKET (CD LID) (L) ASSY	
15	X-4950-326-1	BRACKET (CD LID) (R) ASSY	
16	X-4950-327-1	BRACKET (MD LID) ASSY	
17	3-736-779-41	MAGNET	
* 18	1-671-297-11	ENCORDER BOARD(B)	
* 19	1-671-297-11	ENCORDER BOARD(A)	

Ref. No.	Part No.	Description	Remarks
* 20	1-671-293-11	HP BOARD	
* 21	1-671-305-11	WM BOARD	
* 23	A-4417-173-A	PANEL BOARD, COMPLETE	
* 24	1-671-294-11	LED BOARD	
* 25	1-671-292-11	POWER KEY BOARD	
* 26	4-212-205-11	CASE	
27	3-363-099-11	SCREW (CASE 3 TP2)	
28	3-831-441-11	CUSHION	
29	1-790-136-11	WIRE (FLAT TYPE) (23 CORE)	
30	1-233-544-22	ENCAPSULATED COMPONENT (US)	
30	1-233-546-22	ENCAPSULATED COMPONENT (JE,HK,SP,MY)	
30	1-693-387-21	TUNER (FM/MW/LW) (AEP,UK)	
* 31	1-671-301-11	RDS BOARD (AEP,UK)	
* 32	A-4417-169-A	MAIN BOARD, COMPLETE (US)	
* 32	A-4417-181-A	MAIN BOARD, COMPLETE (AEP,UK)	
* 32	A-4417-187-A	MAIN BOARD, COMPLETE (JE,HK,SP,MY)	
33	1-790-135-11	WIRE (FLAT TYPE) (19 CORE)	
34	1-790-252-11	WIRE (FLAT TYPE) (17 CORE)	
39	4-889-836-01	CUSHION	
* 40	4-023-575-01	CUSHION, LID	

8-2. BACK PANEL BLOCK

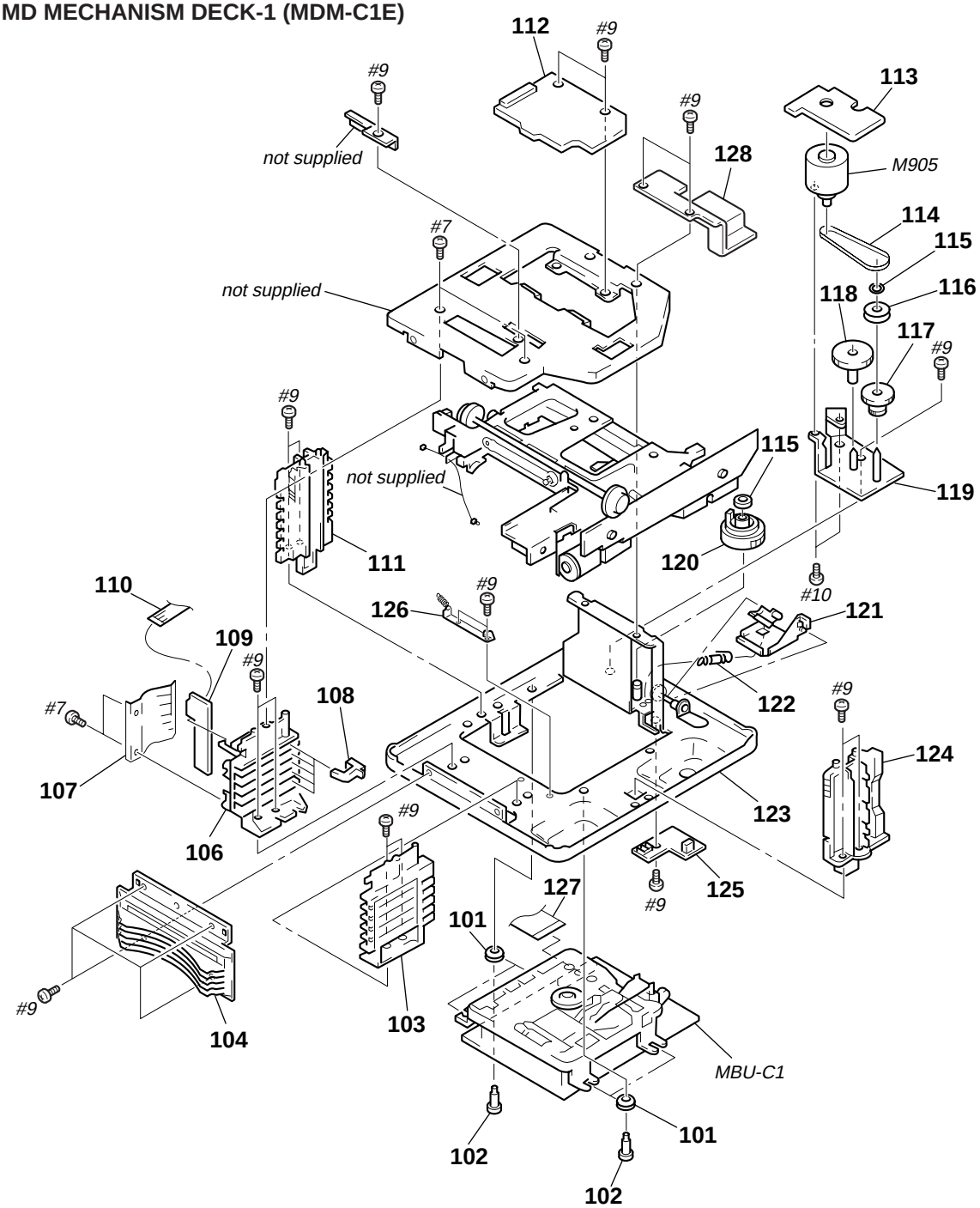


Ref. No.	Part No.	Description	Remarks
* 51	4-212-206-01	COVER (CDM)	
52	4-993-867-01	FOOT (8)	
* 53	1-671-303-11	TRANS-B BOARD	
* 54	1-671-302-11	TRANS-A BOARD	
* 55	1-671-304-11	TRANS-C BOARD	
* 56	A-4417-174-A	AMP BOARD, COMPLETE (US)	
* 56	A-4417-184-A	AMP BOARD, COMPLETE (AEP,UK)	
* 56	A-4417-190-A	AMP BOARD, COMPLETE (JE,HK,SP,MY)	
* 57	4-212-203-02	COVER (BACK)	
* 58	1-671-299-11	REG BOARD	
* 59	1-671-296-11	SP BOARD	
⚠60	1-558-943-41	CORD, POWER (JE)	
⚠60	1-775-787-91	CORD, POWER (AEP,UK,HK,SP,MY)	
⚠60	1-783-532-41	CORD, POWER (US)	
61	3-703-244-00	BUSHING (2104), CORD (US,AEP,UK,HK,SP,MY)	

Ref. No.	Part No.	Description	Remarks
* 61	3-703-571-11	BUSHING (S) (4516), CORD (JE)	
* 62	4-212-204-11	PANEL, BACK (AEP,UK)	
* 62	4-212-204-21	PANEL, BACK (SP,MY)	
* 62	4-212-204-31	PANEL, BACK (HK)	
* 62	4-212-204-41	PANEL, BACK (US)	
* 62	4-212-204-51	PANEL, BACK (JE)	
63	1-500-021-11	CLAMP, SLEEVE FERRITE	
64	4-812-134-00	RIVET (DIA. 3.5), NYLON	
⚠65	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)	
⚠65	1-569-008-21	ADAPTOR, CONVERSION 2P (SP,MY)	
⚠65	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK,HK)	
* 66	1-671-860-11	TRANS-D BOARD (JE,HK,SP,MY)	
⚠T960	1-433-433-11	TRANSFORMER, POWER (JE,HK,SP,MY)	
⚠T960	1-433-432-11	TRANSFORMER, POWER (AEP,UK)	
⚠T960	1-433-434-11	TRANSFORMER, POWER (US)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

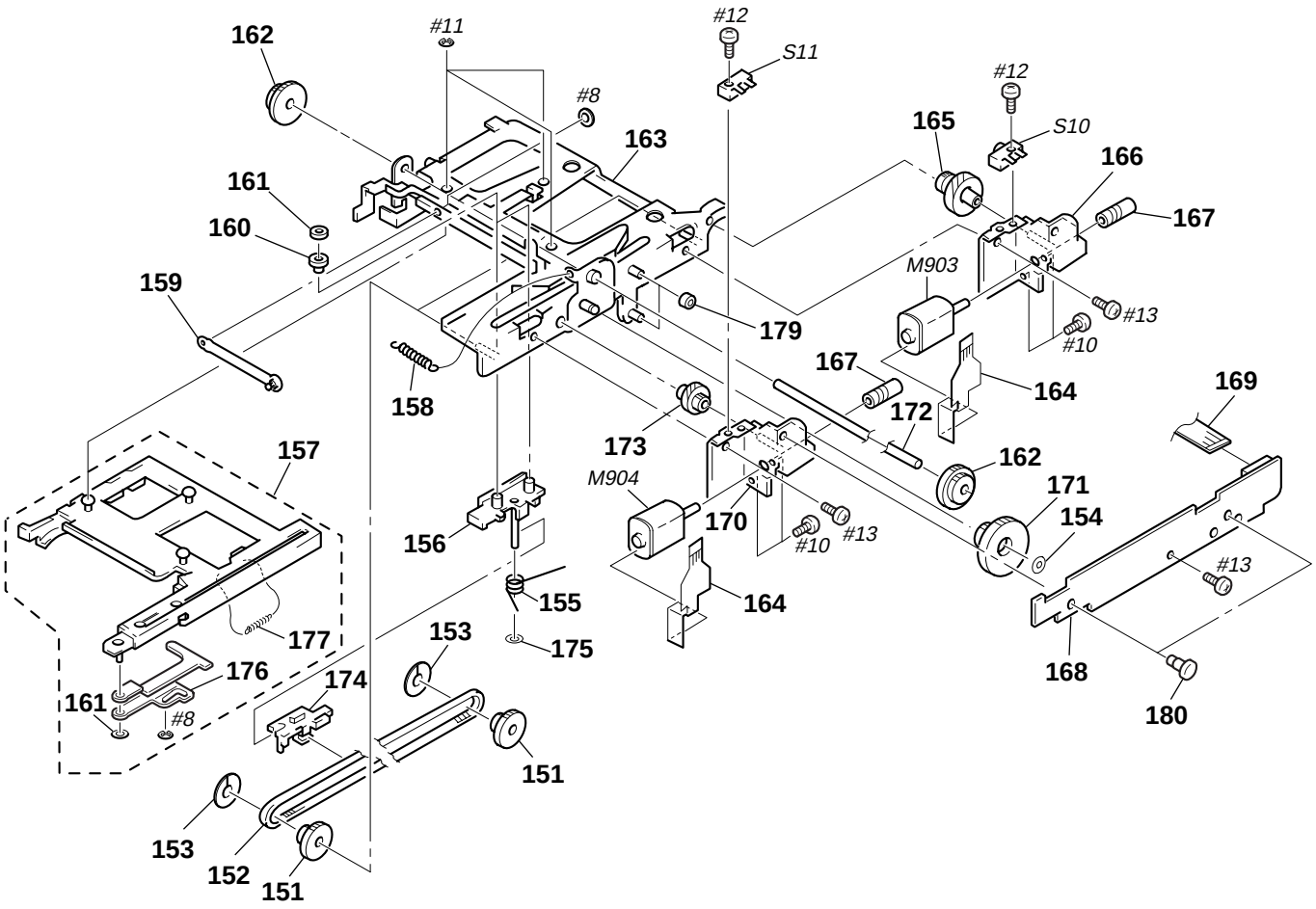
8-3. MD MECHANISM DECK-1 (MDM-C1E)



Ref. No.	Part No.	Description	Remarks
101	4-987-327-01	INSULATOR	
102	4-987-240-01	SCREW, STEP	
103	4-986-932-01	HOLDER (R)	
104	4-212-592-01	ESCUTCHEON ('98 FRONT)	
106	4-986-930-01	HOLDER (L)	
107	4-986-934-01	SPRING (LOCK), LEAF	
108	4-213-115-01	LOCK ('98 NEW)	
* 109	1-671-472-01	DISK SW BOARD	
111	4-988-375-01	RACK (L)	
* 112	1-671-468-01	MECH RELAY BOARD	
* 113	1-671-470-01	HEAD RELAY BOARD	
114	3-661-080-00	BELT, (A)	
115	3-701-438-21	WASHER (E-2.3), NYLON	
116	3-018-636-01	GEAR (PULLEY) (C)	

Ref. No.	Part No.	Description	Remarks
117	3-018-203-01	GEAR (HEAD) (A)	
118	3-018-204-01	GEAR (HEAD) (B)	
119	X-3374-348-1	CHASSIS (HEAD GEAR) ASSY	
120	4-987-242-01	GEAR (CAM)	
* 121	4-987-241-01	LEVER (H)	
122	4-996-395-02	SPRING (H), TENSION	
123	X-4947-927-1	CHASSIS (BASE) ASSY	
124	4-994-630-12	RACK (RN)	
* 125	1-671-471-01	HEAD SW BOARD	
126	X-4949-848-1	STAY (WIRE) ASSY	
127	1-790-121-01	WIRE (FLAT TYPE) (21 CORE)	
* 128	4-997-713-01	COVER (FFC)	
M905	X-4949-160-1	MOTOR (HEAD) ASSY	

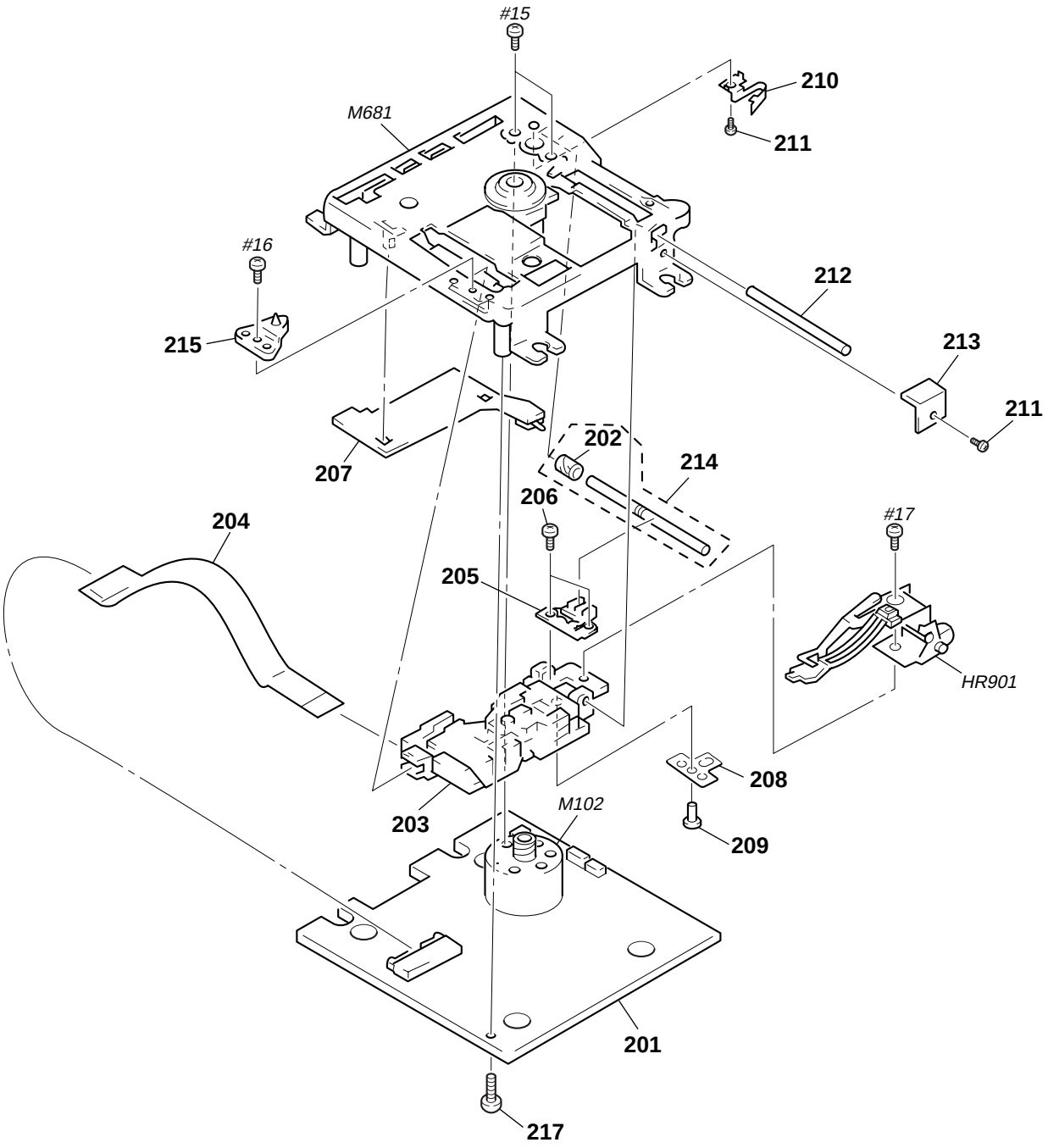
8-4. MD MECHANISM DECK-2 (MDM-C1E)



Ref. No.	Part No.	Description	Remarks
151	4-986-951-01	GEAR (4)	
152	4-987-243-01	BELT, TOOTHED LOCK	
153	4-986-947-01	STOPPER	
154	3-701-438-21	WASHER (E-2.3), NYLON	
155	4-987-236-01	SPRING, TORSION	
156	X-4947-932-1	SLIDER (2) ASSY	
* 157	X-3374-359-1	HOLDER (1H) ASSY	
158	4-987-238-01	SPRING (2), TENSION	
159	X-4948-193-1	LEVER (S) ASSY	
160	4-987-111-01	ROLLER (2)	
161	3-307-948-11	WASHER, NYLON	
162	4-986-952-01	GEAR (5)	
* 163	X-4949-171-1	CHASSIS (ELEVATOR) (NEW) ASSY	
164	1-667-955-11	PC BOARD, FLEXIBLE	
165	4-986-948-01	GEAR (1)	
166	X-4949-225-3	BRACKET (1BN) ASSY	
167	4-986-953-01	WORM	
* 168	1-671-469-01	ELEVATOR RELAY BOARD	

Ref. No.	Part No.	Description	Remarks
169	1-782-909-11	WIRE (FLAT TYPE) (13 CORE)	
170	X-4947-928-1	BRACKET (1A) ASSY	
171	4-986-950-01	GEAR (3)	
172	4-987-244-01	SHAFT (1)	
173	4-986-949-11	GEAR (2)	
174	4-987-235-01	CLAMP (B)	
175	3-326-162-08	WASHER, POLYETHYLENE, SLIT	
177	4-996-395-02	SPRING (H), TENSION	
179	4-987-253-01	ROLLER (1)	
180	4-997-937-01	SCREW (EL), STEP	
? 181	3-889-035-01	SHEET (A), ADHESIVE	
182	4-900-590-01	SCREW, PRECISION SMALL	
* 183	X-4950-607-1	SLIDER (3H) ASSY	
M903	1-698-874-11	MOTOR, DC (LOADING)	
M904	1-698-874-11	MOTOR, DC (UP/DOWN)	
S10	1-762-952-11	SWITCH, PUSH (1 KEY)	
S11	1-762-952-11	SWITCH, PUSH (1 KEY)	

8-5. MD BASE UNIT (MBU-C1E)

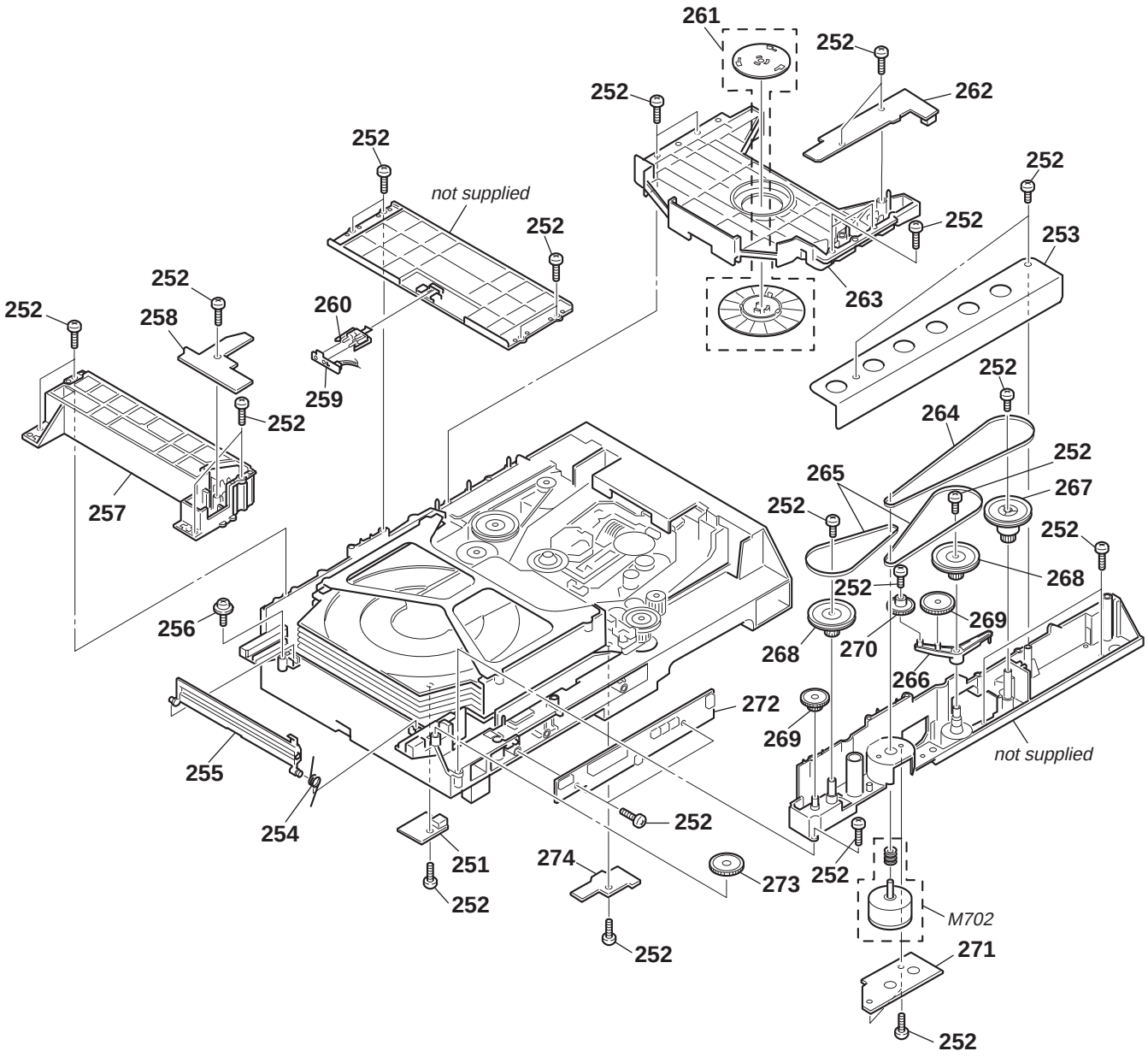


Ref. No.	Part No.	Description	Remarks
* 201	A-4724-319-A	BD(MD) BOARD, COMPLETE	
202	4-979-911-21	GEAR (B)	
⚠ 203	8-583-028-02	OPTICAL PICK-UP BLOCK KMS-260A/J1N	
204	1-664-039-11	PC BOARD, OP TRANSLATION FLEXI	
205	4-963-914-02	RACK (INSERTER)	
206	3-366-890-11	SCREW (M1.4)	
* 207	1-671-467-01	SW BOARD	
208	4-987-061-01	SPACER (RACK)	
209	4-955-841-11	SCREW	
210	4-979-906-11	SPRING (LEAD SCREW)	
211	3-342-375-11	SCREW (M1.7 × 1.4), SPECIAL	

Ref. No.	Part No.	Description	Remarks
* 212	4-988-702-01	SHAFT (MAIN)	
* 213	4-988-484-01	STOPPER	
214	A-3304-200-A	SCREW ASSY, LEAD	
* 215	4-983-511-02	PIN (OUTSERT)	
217	4-908-618-21	SCREW (+BTP) (2 × 6)	
218	4-967-688-11	MAGNET, ABSORPTION	
219	4-979-914-01	SPRING (CLV), TORSION	
220	4-996-088-01	SPRING (AU3)	
HR901	1-500-489-14	HEAD, OVER LIGHT	
M102	A-4672-240-A	MOTOR ASSY, SLED	
M681	A-4672-241-A	MOTOR ASSY, SPINDLE	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

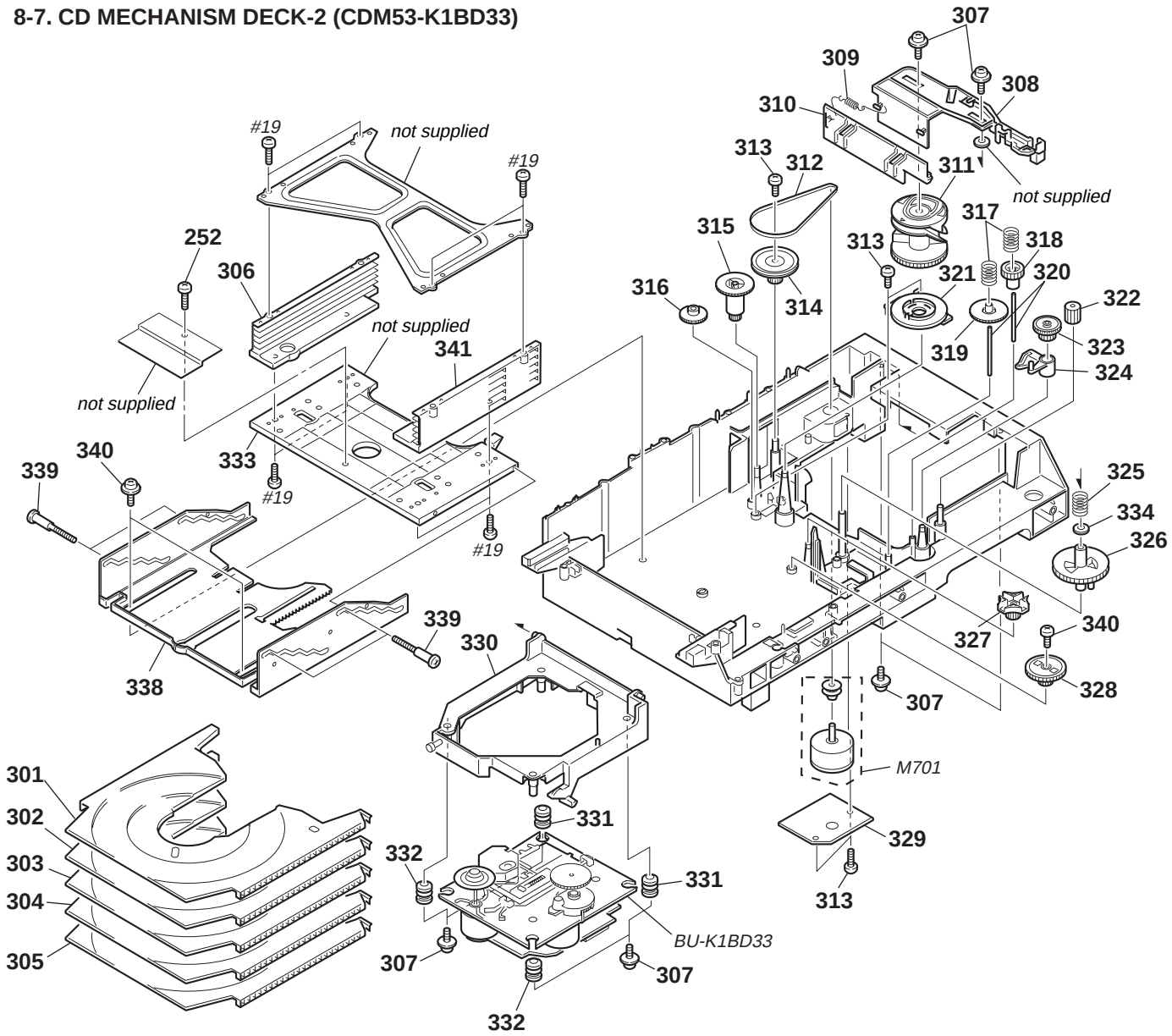
8-6. CD MECHANISM DECK-1 (CDM53-K1BD33)



Ref. No.	Part No.	Description	Remarks
* 251	1-671-504-12	SENSOR BOARD	
252	4-951-620-41	SCREW (2.6), +BVTP	
* 253	4-214-129-01	COVER	
254	4-212-676-03	SPRING (LID), TORSIONOR	
255	4-212-674-01	LID (DISC)	
256	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	
257	A-4672-622-E	BASE (GUIDE) ASSY, FITTING	
* 258	1-671-503-12	OUT SW BOARD	
* 259	1-671-789-12	SENSOR 2 BOARD	
261	A-4672-600-B	MAGNET ASSY, CHUCKING	
* 262	1-671-505-12	IN SW BOARD	
263	A-4672-623-C	BASE (MAGNET) ASSY, FITTING	
264	4-211-235-01	BELT (COMMUNICATION)	

Ref. No.	Part No.	Description	Remarks
265	4-211-236-01	BELT (LOADING)	
266	4-211-228-01	LEVER (GOOSENECK)	
267	4-211-231-01	PULLEY (MODE)	
268	4-211-214-01	PULLEY (LD)	
269	4-211-227-01	GEAR (LD DECELERATION)	
270	4-214-130-01	GEAR (TRAY)	
* 271	1-671-508-12	LOAD MOTOR BOARD	
* 272	1-671-506-12	CONNECTOR BOARD	
273	4-211-215-01	GEAR (EJECT)	
* 274	1-671-502-12	INT/COUNT SW BOARD	
275	4-960-633-11	YOKE (MAGNET)	
M702	X-4950-342-1	MOTOR (LOADING) ASSY	

8-7. CD MECHANISM DECK-2 (CDM53-K1BD33)

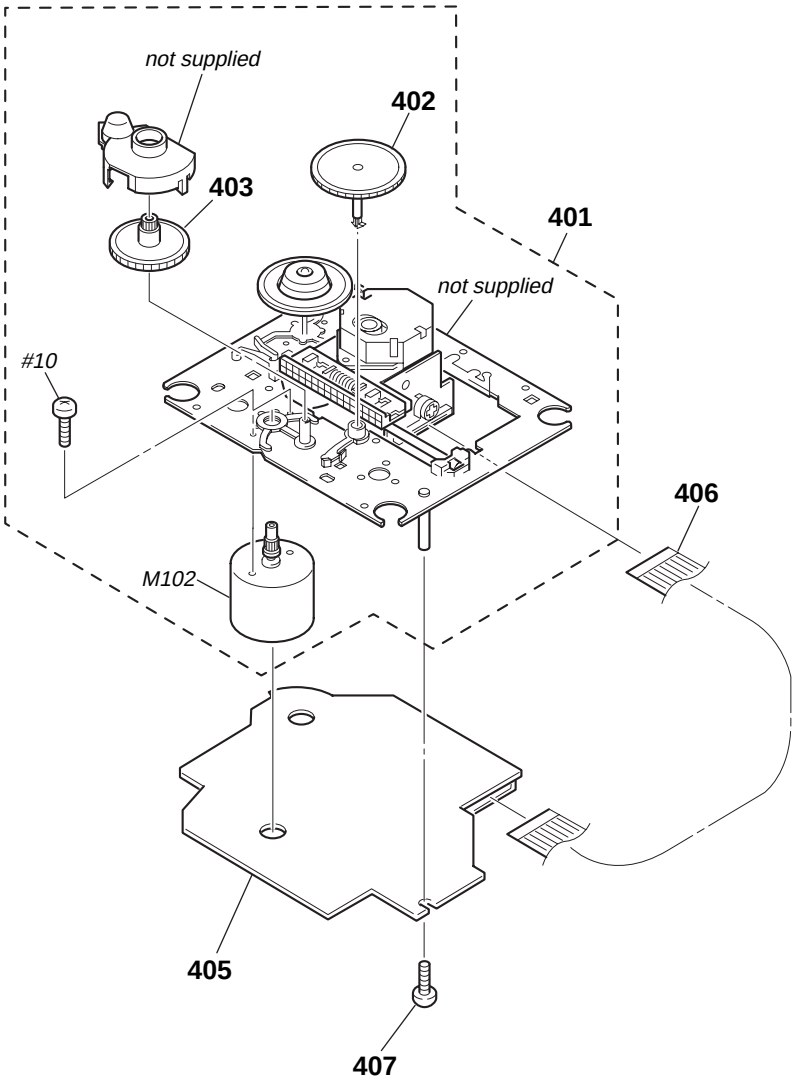


Ref. No.	Part No.	Description	Remarks
301	4-211-212-01	TRAY (SUB)	
302	4-211-212-11	TRAY (SUB)	
303	4-211-212-21	TRAY (SUB)	
304	4-211-212-31	TRAY (SUB)	
305	4-211-212-41	TRAY (SUB)	
306	4-211-210-01	STOCKER (L)	
307	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	
308	4-211-233-01	SLIDER (SELECTION)	
309	4-212-678-01	SPRING (SHUTTER), TENSION	
310	4-212-677-01	SLIDER (SHUTTER)	
311	4-211-230-01	GEAR (CHUCKING)	
312	4-211-237-01	BELT (MODE)	
313	4-951-620-41	SCREW (2.6), +BVTP	
314	4-211-214-01	PULLEY (LD)	
315	4-211-232-01	GEAR (MODE DECELERATION)	
316	4-211-215-01	GEAR (EJECT)	
317	4-211-245-01	SPRING, COMPRESSION	
318	4-211-221-01	GEAR (LD MOVABLE)	
319	4-211-217-02	GEAR (SELECTION)	
320	4-211-242-01	SHAFT (SELECTION GEAR)	
⚠321	1-418-045-01	ENCODER, ROTARY	

Ref. No.	Part No.	Description	Remarks
322	4-211-240-01	GEAR (LD DECELERATION B)	
323	4-211-216-01	GEAR (RELAY)	
324	4-211-241-01	LEVER (SELECTION)	
326	4-211-218-01	GEAR (GEAR A)	
327	4-211-219-01	GEAR (GEAR B)	
328	4-211-220-01	GEAR (U/D SLIDER)	
* 329	1-671-507-12	CLAMP MOTOR BOARD	
330	X-4950-322-2	HOLDER (BU) ASSY	
331	4-211-871-11	INSULATOR (M)	
332	4-211-871-01	INSULATOR (M)	
333	4-211-224-02	BASE (STOCKER), FITTING	
334	3-701-446-21	WASHER, 8	
338	4-211-223-01	SLIDER (U/D)	
339	4-211-244-01	SCREW, STEP	
340	4-933-134-01	SCREW (+PTPWH M2.6 × 6)	
341	4-211-211-01	STOCKER (R)	
? 342	3-341-549-21	SCREW(2.6 × 12)(DIA.7.5),+PTP WH	
343	3-831-441-99	CUSHION, SPEAKER	
344	4-216-879-01	SPRING (GEAR A), COMPRESSION	
M701	X-4950-341-1	MOTOR (CLAMP) ASSY	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

8-8. OPTICAL BLOCK (BU-K1BD33)



Ref. No.	Part No.	Description	Remarks
⚠401	8-848-379-31	OPTICAL PICK-UP BLOCK KSM-213BFN/C2NP	
* 405	A-4724-330-A	BD(CD) BOARD, COMPLETE	
406	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
407	4-996-243-11	SCREW (M2), +PSW	
408	4-216-878-01	COLLAR	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 9
ELECTRICAL PARTS LIST

AMP

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- Abbreviation
  HK : Hong Kong
  SP : Singapore
  MY : Malaysia
  JE : Tourist
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
*	A-4417-174-A	AMP BOARD, COMPLETE (US)			
		**********			
*	A-4417-184-A	AMP BOARD, COMPLETE (AEP, UK)			
		**********			
*	A-4417-190-A	AMP BOARD, COMPLETE (JE, HK, SP, MY)			
		**********			
		< CAPACITOR >			
C801	1-126-051-11	ELECT	47uF	20%	50V
C802	1-162-282-31	CERAMIC	100PF	10%	50V
C803	1-126-051-11	ELECT	47uF	20%	50V
C805	1-126-051-11	ELECT	47uF	20%	50V
C807	1-126-965-11	ELECT	22uF	20%	50V
C808	1-136-165-00	FILM	0.1uF	5%	50V
C809	1-136-165-00	FILM	0.1uF	5%	50V
C830	1-104-665-11	ELECT	100uF	20%	10V
C831	1-126-934-11	ELECT	220uF	20%	10V
C832	1-104-665-11	ELECT	100uF	20%	10V
C839	1-126-052-11	ELECT	100uF	20%	50V
C851	1-126-051-11	ELECT	47uF	20%	50V
C852	1-162-282-31	CERAMIC	100PF	10%	50V
C853	1-126-051-11	ELECT	47uF	20%	50V
C854	1-126-051-11	ELECT	47uF	20%	50V
C855	1-126-052-11	ELECT	100uF	20%	50V
C856	1-164-159-11	CERAMIC	0.1uF		50V
C858	1-136-165-00	FILM	0.1uF	5%	50V
C859	1-136-165-00	FILM	0.1uF	5%	50V
C891	1-117-922-11	ELECT	4700uF	20%	42V
C892	1-117-922-11	ELECT	4700uF	20%	42V
C893	1-136-165-00	FILM	0.1uF	5%	50V
C894	1-136-165-00	FILM	0.1uF	5%	50V
		< CONNECTOR >			
* CN801	1-564-518-11	PLUG, CONNECTOR 3P			
* CN802	1-564-519-11	PLUG, CONNECTOR 4P			
* CN803	1-564-520-11	PLUG, CONNECTOR 5P			
CN804	1-564-524-11	PLUG, CONNECTOR 9P			
CN805	1-691-767-11	PLUG (MICRO CONNECTOR) 5P			
* CN807	1-564-518-11	PLUG, CONNECTOR 3P			
		< DIODE >			
D801	8-719-911-19	DIODE 1SS119			
D802	8-719-911-19	DIODE 1SS119			
D830	8-719-911-19	DIODE 1SS119			
D851	8-719-911-19	DIODE 1SS119			
D852	8-719-911-19	DIODE 1SS119			
D891	8-719-061-56	DIODE RBA-402LLF-A			

Ref. No.	Part No.	Description			Remarks
		< IC >			
IC801	8-749-900-96	IC STK-4142MK2			
		< COIL >			
L809	1-420-872-00	COIL, AIR-CORE			
L859	1-420-872-00	COIL, AIR-CORE			
		< TRANSISTOR >			
Q801	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA			
Q830	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA			
Q831	8-729-620-05	TRANSISTOR 2SC2603-EF			
Q832	8-729-620-05	TRANSISTOR 2SC2603-EF			
Q833	8-729-422-61	TRANSISTOR UN4115			
Q834	8-729-422-73	TRANSISTOR UN4212			
Q835	8-729-422-61	TRANSISTOR UN4115			
Q851	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA			
		< RESISTOR >			
R801	1-249-415-11	CARBON	680	5%	1/4W F
R802	1-249-438-11	CARBON	56K	5%	1/4W
R803	1-249-415-11	CARBON	680	5%	1/4W F
R804	1-249-438-11	CARBON	56K	5%	1/4W
R805	1-260-103-11	CARBON	2.2K	5%	1/2W
R806	1-260-103-11	CARBON	2.2K	5%	1/2W
R807	1-260-099-11	CARBON	1K	5%	1/2W
R808	1-260-099-11	CARBON	1K	5%	1/2W
⚠R809	1-212-881-11	FUSIBLE	100	5%	1/4W F
⚠R810	1-217-151-00	METAL	0.22	10%	2W
R811	1-249-417-11	CARBON	1K	5%	1/4W F
R812	1-249-431-11	CARBON	15K	5%	1/4W
R814	1-260-076-11	CARBON	10	5%	1/2W
R815	1-249-431-11	CARBON	15K	5%	1/4W
R816	1-260-076-11	CARBON	10	5%	1/2W
R830	1-249-431-11	CARBON	15K	5%	1/4W
R831	1-249-425-11	CARBON	4.7K	5%	1/4W F
⚠R832	1-249-408-11	CARBON	180	5%	1/4W F
R833	1-249-417-11	CARBON	1K	5%	1/4W F
R834	1-249-429-11	CARBON	10K	5%	1/4W
R835	1-249-425-11	CARBON	4.7K	5%	1/4W F
R836	1-249-439-11	CARBON	68K	5%	1/4W
R837	1-249-437-11	CARBON	47K	5%	1/4W
R838	1-249-417-11	CARBON	1K	5%	1/4W F
R839	1-249-441-11	CARBON	100K	5%	1/4W
R840	1-249-417-11	CARBON	1K	5%	1/4W F
R841	1-260-098-11	CARBON	820	5%	1/2W
R842	1-260-098-11	CARBON	820	5%	1/2W
R843	1-260-098-11	CARBON	820	5%	1/2W
R844	1-260-098-11	CARBON	820	5%	1/2W

AMP BD (CD)

Ref. No.	Part No.	Description			Remarks
R845	1-249-429-11	CARBON	10K	5%	1/4W
R851	1-249-415-11	CARBON	680	5%	1/4W F
R852	1-249-438-11	CARBON	56K	5%	1/4W
R853	1-249-415-11	CARBON	680	5%	1/4W F
R854	1-249-438-11	CARBON	56K	5%	1/4W
R855	1-260-103-11	CARBON	2.2K	5%	1/2W
R856	1-260-103-11	CARBON	2.2K	5%	1/2W
⚠R857	1-202-972-61	FUSIBLE	1	5%	1/4W F
⚠R859	1-212-881-11	FUSIBLE	100	5%	1/4W F
⚠R860	1-217-151-00	METAL	0.22	10%	2W
⚠R861	1-249-417-11	CARBON	1K	5%	1/4W F
R862	1-249-431-11	CARBON	15K	5%	1/4W
R864	1-260-076-11	CARBON	10	5%	1/2W
R865	1-249-431-11	CARBON	15K	5%	1/4W
R866	1-260-076-11	CARBON	10	5%	1/2W
		< RELAY >			
RY800	1-755-126-11	RELAY			

****

*	A-4724-330-A	BD(CD) BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C102	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C104	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C108	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C109	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C110	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C111	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C112	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C113	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C114	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V
C116	1-126-607-11	ELECT CHIP	47uF	20%	4V
C117	1-126-209-11	ELECT CHIP	100uF	20%	4V
C118	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C119	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C121	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C122	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C123	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C124	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C125	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C126	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C127	1-128-065-11	ELECT CHIP	68uF	20%	10V
C128	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C129	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C130	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C131	1-124-779-00	ELECT CHIP	10uF	20%	16V
C133	1-164-346-11	CERAMIC CHIP	1uF		16V
C140	1-164-346-11	CERAMIC CHIP	1uF		16V
C141	1-164-346-11	CERAMIC CHIP	1uF		16V
C143	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C151	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C153	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C154	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C156	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C157	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C161	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C162	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C163	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C165	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C167	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C168	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C171	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C172	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C181	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C182	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
		< CONNECTOR >			
CN101	1-778-874-11	CONNECTOR,FFC(LIF(NON-ZIF))19P			
CN102	1-777-937-11	CONNECTOR, FFC/FPC 16P			
		< FERRITE BEAD >			
FB101	1-500-445-21	FERRITE 0UH			
FB102	1-216-295-91	SHORT 0			
FB103	1-500-445-21	FERRITE 0UH			
FB104	1-216-295-91	SHORT 0			
		< IC >			
IC101	8-752-386-85	IC CXD2587Q			
IC102	8-759-549-28	IC BA5974FP-E2			
IC103	8-752-085-51	IC CXA2568M-T6			
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR MSB710-R			
		< RESISTOR >			
R101	1-216-077-00	METAL CHIP	15K	5%	1/10W
R102	1-216-097-91	RES,CHIP	100K	5%	1/10W
R103	1-216-077-00	METAL CHIP	15K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-097-91	RES,CHIP	100K	5%	1/10W
R106	1-216-049-91	RES,CHIP	1K	5%	1/10W
R107	1-216-073-00	METAL CHIP	10K	5%	1/10W
R108	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R109	1-216-121-91	RES,CHIP	1M	5%	1/10W
R110	1-216-025-91	RES,CHIP	100	5%	1/10W
R111	1-216-121-91	RES,CHIP	1M	5%	1/10W
R113	1-216-121-91	RES,CHIP	1M	5%	1/10W
R114	1-216-073-00	METAL CHIP	10K	5%	1/10W
R116	1-216-001-00	METAL CHIP	10	5%	1/10W
R117	1-216-049-91	RES,CHIP	1K	5%	1/10W
R119	1-216-041-00	METAL CHIP	470	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R124	1-216-097-91	RES,CHIP	100K	5%	1/10W
R131	1-216-037-00	METAL CHIP	330	5%	1/10W
R135	1-216-295-91	SHORT	0		
R136	1-216-295-91	SHORT	0		
R137	1-216-295-91	SHORT	0		
R138	1-216-295-91	SHORT	0		
R143	1-216-103-00	METAL CHIP	180K	5%	1/10W
R144	1-216-103-00	METAL CHIP	180K	5%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
R147	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R148	1-216-001-00	METAL CHIP	10	5%	1/10W
R149	1-216-001-00	METAL CHIP	10	5%	1/10W
R158	1-216-111-00	METAL CHIP	390K	5%	1/10W
R159	1-216-101-00	METAL CHIP	150K	5%	1/10W
R161	1-216-308-00	METAL CHIP	4.7	5%	1/10W
R162	1-216-101-00	METAL CHIP	150K	5%	1/10W
R171	1-216-078-00	RES,CHIP	16K	5%	1/10W
R172	1-216-073-00	METAL CHIP	10K	5%	1/10W
R173	1-216-077-00	METAL CHIP	15K	5%	1/10W
R181	1-216-078-00	RES,CHIP	16K	5%	1/10W
R182	1-216-073-00	METAL CHIP	10K	5%	1/10W
R183	1-216-077-00	METAL CHIP	15K	5%	1/10W
		< NETWORK >			
RN101	1-233-412-11	RES, CHIP NETWORK 1.0K (3216)			
RN102	1-233-576-11	RES, CHIP NETWORK 100			
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF			
		< VIBRATOR >			
X101	1-767-408-21	VIBRATOR, CRYSTAL 16.934MHz			
**********					
*	A-4724-319-A	BD(MD) BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-125-822-11	TANTALUM	10uF	20%	10V
C102	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C103	1-125-822-11	TANTALUM	10uF	20%	10V
C104	1-125-822-11	TANTALUM	10uF	20%	10V
C105	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C106	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C107	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C108	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C109	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C111	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C112	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C113	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C115	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C116	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C117	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C118	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C119	1-125-822-11	TANTALUM	10uF	20%	10V
C121	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C122	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C123	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C124	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C127	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C128	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C129	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C130	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C131	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C132	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C133	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C134	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C135	1-163-038-91	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remarks
C136	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C140	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C142	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C143	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C144	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C148	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C151	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C152	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C153	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C156	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C158	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C160	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C161	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C163	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C164	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C167	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C168	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C169	1-125-822-11	TANTALUM	10uF	20%	10V
C171	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C181	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C182	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C183	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C184	1-117-962-11	ELECT CHIP	22uF	20%	6.3V
C185	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V
C187	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C188	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C189	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C190	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C191	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C197	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C216	1-125-822-11	TANTALUM	10uF	20%	10V
C350	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C351	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C352	1-126-204-11	ELECT CHIP	47uF	20%	16V
C353	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C354	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C355	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C357	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C358	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C359	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C360	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C361	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C362	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C363	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C401	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C402	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C503	1-125-822-11	TANTALUM	10uF	20%	10V
C509	1-125-822-11	TANTALUM	10uF	20%	10V
C510	1-125-822-11	TANTALUM	10uF	20%	10V
C522	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C527	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C528	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C529	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C901	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C2001	1-163-038-91	CERAMIC CHIP	0.1uF		25V

BD (MD)

Ref. No.	Part No.	Description	Remarks
		< CONNECTOR >	
CN101	1-766-508-11	CONNECTOR, FFC/FPC (ZIF) 22P	
CN102	1-770-072-11	CONNECTOR, (LIF (NON-ZIF))FFC23P	
CN103	1-784-865-01	CONNECTOR, FFC (LIF(NON-ZIF))13	
* CN104	1-785-379-01	HOUSING, CONNECTOR	
CN105	1-784-833-21	CONNECTOR, FFC (LIF(NON-ZIF))21P	
* CN106	1-695-441-21	PIN, CONNECTOR (PC BOARD) 7P	
CN108	1-750-499-21	PIN, CONNECTOR (PC BOARD) 5P	
* CN109	1-750-494-31	PIN, CONNECTOR (PC BOARD) 6P	
* CN2000	1-750-078-11	HOUSING, CONNECTOR 3P	
		< DIODE >	
D101	8-719-988-62	DIODE 1SS355	
D181	8-719-046-86	DIODE F1J6TP	
D183	8-719-046-86	DIODE F1J6TP	
		< IC >	
IC101	8-752-080-95	IC CXA2523AR	
IC103	8-729-903-10	IC TRANSISTOR FMW1	
IC121	8-752-389-44	IC CXD2654R	
IC124	8-759-498-44	IC MSM51V4400D-70TSK	
IC152	8-759-430-25	IC BH6511FS-E2	
IC171	8-759-487-04	IC BR24C02F-E2	
IC172	8-759-040-83	IC BA6287F	
IC181	8-759-481-17	IC MC74ACT08DTR2	
IC191	8-759-460-72	IC BA033FP-E2	
IC201	8-759-553-65	IC UDA1341TS/N2	
IC316	8-759-578-37	IC M30624MG-205C	
IC401	8-759-564-53	IC MC74HCU04ADTR2	
IC2000	8-759-195-81	IC TC7S86FU(TE85R)	
		< COIL >	
L008	1-500-445-21	FERRITE 0uH	
L101	1-414-813-11	FERRITE 0uH	
L102	1-414-813-11	FERRITE 0uH	
L103	1-414-813-11	FERRITE 0uH	
L105	1-414-813-11	FERRITE 0uH	
L106	1-414-813-11	FERRITE 0uH	
L121	1-414-813-11	FERRITE 0uH	
L122	1-414-813-11	FERRITE 0uH	
L151	1-412-622-51	INDUCTOR 10uH	
L152	1-412-622-51	INDUCTOR 10uH	
L153	1-412-039-51	INDUCTOR CHIP 100uH	
L154	1-412-039-51	INDUCTOR CHIP 100uH	
L161	1-414-813-11	FERRITE 0uH	
L162	1-414-813-11	FERRITE 0uH	
L181	1-424-675-11	INDUCTOR 33uH	
L351	1-414-813-11	FERRITE 0uH	
L401	1-414-813-11	FERRITE 0uH	
L502	1-414-813-11	FERRITE 0uH	
		< TRANSISTOR >	
Q101	8-729-403-35	TRANSISTOR UN5113	
Q102	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR	
Q103	8-729-028-99	TRANSISTOR RN1307-TE85L	
Q104	8-729-028-99	TRANSISTOR RN1307-TE85L	
Q162	8-729-101-07	TRANSISTOR 2SB798-DL	
Q163	8-729-403-35	TRANSISTOR UN5113	
Q181	8-729-018-75	TRANSISTOR 2SJ278MY	
Q182	8-729-017-65	TRANSISTOR 2SK1764KY	
Q401	8-729-402-42	TRANSISTOR UN5213	
Q402	8-729-402-42	TRANSISTOR UN5213	
Q403	8-729-402-42	TRANSISTOR UN5213	
		< RESISTOR >	
R103	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R104	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R105	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
R106	1-216-133-00	METAL CHIP 3.3M 5% 1/10W	
R107	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R110	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R112	1-216-089-91	RES,CHIP 47K 5% 1/10W	
R113	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R115	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R117	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R121	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R125	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R131	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R132	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R133	1-216-117-00	METAL CHIP 680K 5% 1/10W	
R134	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R135	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R136	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R137	1-216-025-91	RES,CHIP 100 5% 1/10W	
R139	1-216-035-00	METAL CHIP 270 5% 1/10W	
R140	1-216-029-00	METAL CHIP 150 5% 1/10W	
R142	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R143	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R144	1-216-025-91	RES,CHIP 100 5% 1/10W	
R145	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R146	1-216-037-00	METAL CHIP 330 5% 1/10W	
R147	1-216-025-91	RES,CHIP 100 5% 1/10W	
R148	1-216-045-00	METAL CHIP 680 5% 1/10W	
R149	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R151	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R152	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R153	1-216-043-91	RES,CHIP 560 5% 1/10W	
R158	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R159	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R161	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R162	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R163	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R164	1-216-045-00	METAL CHIP 680 5% 1/10W	
R165	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R166	1-220-149-11	REGISTER 2.2 10% 1/2W	
R167	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
R169	1-219-724-11	METAL CHIP 1 1% 1/4W	
R170	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R171	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R175	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
R177	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R178	1-216-295-91	SHORT 0	
R179	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R180	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R182	1-216-089-91	RES,CHIP 47K 5% 1/10W	

Ref. No.	Part No.	Description			Remarks
R183	1-216-089-91	RES,CHIP	47K	5%	1/10W
R184	1-216-073-00	METAL CHIP	10K	5%	1/10W
R185	1-216-081-00	METAL CHIP	22K	5%	1/10W
R186	1-216-089-91	RES,CHIP	47K	5%	1/10W
R188	1-216-073-00	METAL CHIP	10K	5%	1/10W
R189	1-216-073-00	METAL CHIP	10K	5%	1/10W
R190	1-216-073-00	METAL CHIP	10K	5%	1/10W
R195	1-216-073-00	METAL CHIP	10K	5%	1/10W
R196	1-216-295-91	SHORT	0		
R330	1-216-073-00	METAL CHIP	10K	5%	1/10W
R331	1-216-246-00	RES,CHIP	100K	5%	1/8W
R333	1-216-222-00	RES,CHIP	10K	5%	1/8W
R351	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R352	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R353	1-216-295-91	SHORT	0		
R361	1-216-073-00	METAL CHIP	10K	5%	1/10W
R363	1-216-222-00	RES,CHIP	10K	5%	1/8W
R366	1-216-097-91	RES,CHIP	100K	5%	1/10W
R367	1-216-097-91	RES,CHIP	100K	5%	1/10W
R370	1-216-246-00	RES,CHIP	100K	5%	1/8W
R374	1-216-295-91	SHORT	0		
R383	1-216-073-00	METAL CHIP	10K	5%	1/10W
R384	1-216-073-00	METAL CHIP	10K	5%	1/10W
R385	1-216-073-00	METAL CHIP	10K	5%	1/10W
R386	1-216-073-00	METAL CHIP	10K	5%	1/10W
R391	1-216-073-00	METAL CHIP	10K	5%	1/10W
R394	1-216-073-00	METAL CHIP	10K	5%	1/10W
R395	1-216-073-00	METAL CHIP	10K	5%	1/10W
R396	1-216-073-00	METAL CHIP	10K	5%	1/10W
R397	1-216-073-00	METAL CHIP	10K	5%	1/10W
R398	1-216-073-00	METAL CHIP	10K	5%	1/10W
R399	1-216-073-00	METAL CHIP	10K	5%	1/10W
R400	1-216-073-00	METAL CHIP	10K	5%	1/10W
R401	1-216-089-91	RES,CHIP	47K	5%	1/10W
R402	1-216-113-00	METAL CHIP	470K	5%	1/10W
R403	1-216-073-00	METAL CHIP	10K	5%	1/10W
R432	1-216-097-91	RES,CHIP	100K	5%	1/10W
R433	1-216-097-91	RES,CHIP	100K	5%	1/10W
R434	1-216-097-91	RES,CHIP	100K	5%	1/10W
R503	1-216-025-91	RES,CHIP	100	5%	1/10W
R504	1-216-025-91	RES,CHIP	100	5%	1/10W
R520	1-217-671-11	METAL CHIP	1	5%	1/10W
R521	1-217-671-11	METAL CHIP	1	5%	1/10W
R550	1-216-025-91	RES,CHIP	100	5%	1/10W
R551	1-216-025-91	RES,CHIP	100	5%	1/10W
R617	1-216-025-91	RES,CHIP	100	5%	1/10W
R618	1-216-025-91	RES,CHIP	100	5%	1/10W
R619	1-216-025-91	RES,CHIP	100	5%	1/10W
R802	1-216-025-91	RES,CHIP	100	5%	1/10W
R803	1-216-025-91	RES,CHIP	100	5%	1/10W
R806	1-216-017-91	RES,CHIP	47	5%	1/10W
R808	1-216-017-91	RES,CHIP	47	5%	1/10W
R809	1-216-081-00	METAL CHIP	22K	5%	1/10W
R810	1-216-025-91	RES,CHIP	100	5%	1/10W
R811	1-216-025-91	RES,CHIP	100	5%	1/10W
R812	1-216-025-91	RES,CHIP	100	5%	1/10W
R813	1-216-025-91	RES,CHIP	100	5%	1/10W
R814	1-216-085-00	METAL CHIP	33K	5%	1/10W
R816	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R817	1-216-067-00	METAL CHIP	5.6K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R821	1-216-025-91	RES,CHIP	100	5%	1/10W
R822	1-216-025-91	RES,CHIP	100	5%	1/10W
R823	1-216-025-91	RES,CHIP	100	5%	1/10W
R824	1-216-025-91	RES,CHIP	100	5%	1/10W
R825	1-216-025-91	RES,CHIP	100	5%	1/10W
R826	1-216-025-91	RES,CHIP	100	5%	1/10W
R827	1-216-025-91	RES,CHIP	100	5%	1/10W
R828	1-216-025-91	RES,CHIP	100	5%	1/10W
R830	1-216-025-91	RES,CHIP	100	5%	1/10W
R831	1-216-025-91	RES,CHIP	100	5%	1/10W
R832	1-216-025-91	RES,CHIP	100	5%	1/10W
R833	1-216-025-91	RES,CHIP	100	5%	1/10W
R851	1-216-025-91	RES,CHIP	100	5%	1/10W
R852	1-216-025-91	RES,CHIP	100	5%	1/10W
R853	1-216-025-91	RES,CHIP	100	5%	1/10W
R854	1-216-025-91	RES,CHIP	100	5%	1/10W
R855	1-216-025-91	RES,CHIP	100	5%	1/10W
R856	1-216-025-91	RES,CHIP	100	5%	1/10W
R857	1-216-025-91	RES,CHIP	100	5%	1/10W
R858	1-216-025-91	RES,CHIP	100	5%	1/10W
R859	1-216-025-91	RES,CHIP	100	5%	1/10W
R860	1-216-025-91	RES,CHIP	100	5%	1/10W
R861	1-216-025-91	RES,CHIP	100	5%	1/10W
R862	1-216-025-91	RES,CHIP	100	5%	1/10W
R863	1-216-025-91	RES,CHIP	100	5%	1/10W
R864	1-216-025-91	RES,CHIP	100	5%	1/10W
R865	1-216-025-91	RES,CHIP	100	5%	1/10W
R867	1-216-025-91	RES,CHIP	100	5%	1/10W
R870	1-216-073-00	METAL CHIP	10K	5%	1/10W
R871	1-216-073-00	METAL CHIP	10K	5%	1/10W
R872	1-216-073-00	METAL CHIP	10K	5%	1/10W
R873	1-216-073-00	METAL CHIP	10K	5%	1/10W
R874	1-216-073-00	METAL CHIP	10K	5%	1/10W
R875	1-216-073-00	METAL CHIP	10K	5%	1/10W
R876	1-216-073-00	METAL CHIP	10K	5%	1/10W
R877	1-216-073-00	METAL CHIP	10K	5%	1/10W
R878	1-216-073-00	METAL CHIP	10K	5%	1/10W
R879	1-216-073-00	METAL CHIP	10K	5%	1/10W
R880	1-216-073-00	METAL CHIP	10K	5%	1/10W
R881	1-216-073-00	METAL CHIP	10K	5%	1/10W
R882	1-216-073-00	METAL CHIP	10K	5%	1/10W
R886	1-216-073-00	METAL CHIP	10K	5%	1/10W
R887	1-216-073-00	METAL CHIP	10K	5%	1/10W
R905	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1001	1-216-001-00	METAL CHIP	10	5%	1/10W
R1002	1-216-001-00	METAL CHIP	10	5%	1/10W
R1003	1-216-001-00	METAL CHIP	10	5%	1/10W
R2000	1-216-073-00	METAL CHIP	10K	5%	1/10W
R2002	1-216-073-00	METAL CHIP	10K	5%	1/10W

< VIBRATOR >

X101	1-579-870-21	VIBRATOR, CRYSTAL 22.579MHz
X302	1-781-155-21	VIBRATOR, CERAMIC 10.0MHz

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Ref. No.	Part No.	Description			Remarks
*	1-671-507-12	CLAMP MOTOR BOARD			
		**********			
		< CAPACITOR >			
C701	1-162-306-11	CERAMIC	0.01uF	20%	16V
C702	1-126-964-11	ELECT	10uF	20%	50V
C711	1-162-306-11	CERAMIC	0.01uF	20%	16V
		< CONNECTOR >			
CN712	1-506-469-11	PIN, CONNECTOR 4P			
		< DIODE >			
D701	8-719-983-66	DIODE MTZJ-T-72-3.6B			
		< IC >			
IC701	8-759-633-65	IC M54641L			
		< RESISTOR >			
R701	1-249-411-11	CARBON	330	5%	1/4W
R702	1-249-401-11	CARBON	47	5%	1/4W F
**********					
*	1-671-506-12	CONNECTOR BOARD			
		**********			
		< CONNECTOR >			
CN701	1-568-860-11	SOCKET, CONNECTOR 17P			
		< TRANSISTOR >			
Q701	8-729-029-66	TRANSISTOR DTC114ESA			
		< RESISTOR >			
R707	1-249-424-11	CARBON	3.9K	5%	1/4W F
R708	1-249-417-11	CARBON	1K	5%	1/4W F
R709	1-249-429-11	CARBON	10K	5%	1/4W
**********					
*	1-671-472-01	DISK SW BOARD			
		**********			
		< CONNECTOR >			
* CNP14	1-568-826-11	SOCKET, CONNECTOR 7P			
		< SWITCH >			
S1	1-771-225-12	SWITCH, LEVER			
S2	1-771-225-12	SWITCH, LEVER			
S3	1-771-225-12	SWITCH, LEVER			
S4	1-771-225-12	SWITCH, LEVER			
S5	1-771-225-12	SWITCH, LEVER			
**********					

Ref. No.	Part No.	Description			Remarks
*	1-671-469-01	ELEVATOR RELAY BOARD			
		**********			
		< CAPACITOR >			
C1	1-126-382-11	ELECT	100uF	20%	6.3V
C570	1-163-063-00	CERAMIC CHIP	0.022uF		50V
C571	1-115-871-11	ELECT	1uF	20%	50V
C572	1-163-063-00	CERAMIC CHIP	0.022uF		50V
		< CONNECTOR >			
* CN570	1-568-832-11	SOCKET, CONNECTOR 13P			
* CN571	1-568-848-11	SOCKET, CONNECTOR 5P			
* CN572	1-568-848-11	SOCKET, CONNECTOR 5P			
		< IC >			
IC570	8-759-982-73	IC BA10393F			
		< PHOTO INTERUPTER >			
PH570	8-749-012-33	PHOTO INTERRUPTER GP1S94			
PH571	8-749-012-33	PHOTO INTERRUPTER GP1S94			
		< TRANSISTOR >			
Q570	8-729-030-02	TRANSISTOR DTC144ESA			
		< RESISTOR >			
R570	1-216-224-91	RES,CHIP	12K	5%	1/8W
R571	1-216-218-00	RES,CHIP	6.8K	5%	1/8W
R572	1-216-238-91	RES,CHIP	47K	5%	1/8W
R573	1-216-230-00	RES,CHIP	22K	5%	1/8W
R574	1-216-230-00	RES,CHIP	22K	5%	1/8W
R575	1-216-230-00	RES,CHIP	22K	5%	1/8W
R576	1-216-230-00	RES,CHIP	22K	5%	1/8W
R577	1-216-188-00	RES,CHIP	390	5%	1/8W
R578	1-216-188-00	RES,CHIP	390	5%	1/8W
R579	1-216-296-91	SHORT	0		
R580	1-216-296-91	SHORT	0		
R581	1-216-296-91	SHORT	0		
R582	1-216-296-91	SHORT	0		
R583	1-216-296-91	SHORT	0		
		< SWITCH >			
S570	1-771-225-12	SWITCH, LEVER			
S571	1-771-225-12	SWITCH, LEVER			
**********					
*	1-671-297-11	ENCORDER BOARD(A)			
		**********			
		< CAPACITOR >			
C735	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C736	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN708	1-785-289-11	CONNECTOR, BOARD TO BOARD 6P			
		< ROTARY ENCODER >			
S701	1-467-968-11	ENCODER, ROTARY(VOLUME)			
**********					

Ref. No.	Part No.	Description			Remarks
*	1-671-297-11	ENCORDER BOARD(B)			
		**********			
		< CAPACITOR >			
C735	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C736	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN708	1-785-289-11	CONNECTOR, BOARD TO BOARD 6P			
		< ROTARY ENCODER >			
S701	1-467-968-11	ENCODER, ROTARY(MULTI JOG)			
**********					
*	1-671-470-01	HEAD RELAY BOARD			
		**********			
		< CAPACITOR >			
C4	1-101-005-00	CERAMIC	22000PF		50V
C5	1-101-005-00	CERAMIC	22000PF		50V
		< CONNECTOR >			
* CNP19	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
**********					
*	1-671-471-01	HEAD SW BOARD			
		**********			
		< CONNECTOR >			
* CNP18	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
		< SWITCH >			
S6	1-771-495-01	SWITCH, PUSH (DETECTION)			
S7	1-771-495-01	SWITCH, PUSH (DETECTION)			
**********					
*	1-671-293-11	HP BOARD			
		**********			
	1-690-880-41	LEAD (WITH CONNECTOR)			
		< CAPACITOR >			
C20	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C21	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C22	1-163-038-91	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
* CN20	1-564-508-11	PLUG, CONNECTOR 5P			
* CN21	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
		< JACK >			
J20	1-764-106-21	JACK(PHONES)			
**********					

Ref. No.	Part No.	Description			Remarks
*	1-671-505-12	IN SW BOARD			
		**********			
		< CONNECTOR >			
* CN710	1-568-941-11	PIN, CONNECTOR 3P			
		< SWITCH >			
S703	1-771-218-11	SWITCH, MICRO(MID IN)			
S704	1-771-218-11	SWITCH, MICRO(IN)			
**********					
*	1-671-502-12	INT/COUNT SW BOARD			
		**********			
		< SWITCH >			
S705	1-771-264-11	SWITCH, PUSH (DETECTION) (1 KEY) (INIT)			
S706	1-771-264-11	SWITCH, PUSH (DETECTION) (1 KEY) (COUNT)			
**********					
*	1-671-294-11	LED BOARD			
		**********			
		< DIODE >			
D725	8-719-069-45	DIODE SELU5E23C-TP15			
		< RESISTOR >			
R793	1-216-037-00	METAL CHIP	330	5%	1/10W
**********					
*	1-671-508-12	LOAD MOTOR BOARD			
		**********			
		< CAPACITOR >			
C703	1-162-306-11	CERAMIC	0.01uF	20%	16V
C704	1-126-964-11	ELECT	10uF	20%	50V
C712	1-162-306-11	CERAMIC	0.01uF	20%	16V
		< CONNECTOR >			
CN713	1-506-469-11	PIN, CONNECTOR 4P			
		< DIODE >			
D702	8-719-109-85	DIODE RD5.1ES-B2			
		< IC >			
IC702	8-759-633-65	IC M54641L			
		< RESISTOR >			
R703	1-249-411-11	CARBON	330	5%	1/4W
R704	1-249-401-11	CARBON	47	5%	1/4W F
**********					

MAIN

Ref. No.	Part No.	Description			Remarks
*	A-4417-169-A	MAIN BOARD, COMPLETE (US)			
		**********			
*	A-4417-181-A	MAIN BOARD, COMPLETE (AEP, UK)			
		**********			
*	A-4417-187-A	MAIN BOARD, COMPLETE (JE, HK, SP, MY)			
		**********			
	7-685-646-79	SCREW +BVTP 3 × 8 TYPE2 N-S			
		< CAPACITOR >			
C101	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C102	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C103	1-126-157-11	ELECT	10uF	20%	16V
C104	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C105	1-126-964-11	ELECT	10uF	20%	50V
C106	1-126-048-81	ELECT	10uF	20%	50V
C107	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C108	1-126-048-81	ELECT	10uF	20%	50V
C109	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C110	1-124-261-00	ELECT	10uF	20%	50V
C111	1-137-195-11	FILM	0.56uF	5%	50V
C112	1-136-158-00	FILM	0.027uF	5%	50V
C113	1-136-167-00	FILM	0.15uF	5%	50V
C114	1-137-437-11	FILM	0.0056uF	5%	50V
C115	1-115-185-11	CERAMIC CHIP	0.033uF	10%	50V
C116	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C117	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C118	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C119	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C121	1-126-048-81	ELECT	10uF	20%	50V
C122	1-162-291-31	CERAMIC	560PF	10%	50V
C123	1-136-165-00	FILM	0.1uF	5%	50V
C124	1-136-165-00	FILM	0.1uF	5%	50V
C125	1-126-048-81	ELECT	10uF	20%	50V
C130	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C150	1-216-295-91	SHORT	0		
C151	1-124-589-11	ELECT	47uF	20%	16V
C152	1-124-589-11	ELECT	47uF	20%	16V
C153	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C154	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C155	1-137-375-11	FILM	0.068uF	5%	50V
C156	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C158	1-126-964-11	ELECT	10uF	20%	50V
C159	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C160	1-124-465-00	ELECT	0.47uF	20%	50V
C201	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C202	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C203	1-126-157-11	ELECT	10uF	20%	16V
C204	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C205	1-126-964-11	ELECT	10uF	20%	50V
C206	1-126-048-81	ELECT	10uF	20%	50V
C207	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C208	1-126-048-81	ELECT	10uF	20%	50V
C209	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C210	1-124-261-00	ELECT	10uF	20%	50V
C211	1-137-195-11	FILM	0.56uF	5%	50V
C212	1-136-158-00	FILM	0.027uF	5%	50V
C213	1-136-167-00	FILM	0.15uF	5%	50V
C214	1-137-437-11	FILM	0.0056uF	5%	50V
C215	1-115-185-11	CERAMIC CHIP	0.033uF	10%	50V

Ref. No.	Part No.	Description			Remarks
C216	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C217	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C218	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C219	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C221	1-126-048-81	ELECT	10uF	20%	50V
C222	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C223	1-136-165-00	FILM	0.1uF	5%	50V
C224	1-136-165-00	FILM	0.1uF	5%	50V
C225	1-126-048-81	ELECT	10uF	20%	50V
C300	1-104-665-11	ELECT	100uF	20%	10V
C301	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C302	1-104-664-11	ELECT	47uF	20%	16V
C303	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C304	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C305	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C306	1-164-159-11	CERAMIC	0.1uF		50V
C307	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C308	1-126-916-11	ELECT	1000uF	20%	6.3V
C309	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C310	1-126-925-11	ELECT	470uF	20%	10V
C311	1-104-665-11	ELECT	100uF	20%	10V
C312	1-126-925-11	ELECT	470uF	20%	10V
C313	1-127-512-00	ELECT	10uF	20%	16V
C315	1-162-282-31	CERAMIC	100PF	10%	50V
C318	1-162-290-31	CERAMIC	470PF	10%	50V
C319	1-162-282-31	CERAMIC	100PF	10%	50V
C320	1-162-282-31	CERAMIC	100PF	10%	50V
C400	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C401	1-124-252-00	ELECT	0.33uF	20%	50V
C402	1-124-589-11	ELECT	47uF	20%	16V
C403	1-162-306-11	CERAMIC	0.01uF	20%	16V
C404	1-124-589-11	ELECT	47uF	20%	16V
C405	1-126-176-11	ELECT	220uF	20%	10V
C406	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C407	1-126-176-11	ELECT	220uF	20%	10V
C408	1-164-159-11	CERAMIC	0.1uF		50V
C409	1-104-665-11	ELECT	100uF	20%	10V
C410	1-164-159-11	CERAMIC	0.1uF		50V
C411	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C412	1-162-600-11	CERAMIC	0.0047uF	20%	16V
C413	1-162-600-11	CERAMIC	0.0047uF	20%	16V
C414	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C420	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C421	1-124-261-00	ELECT	10uF	20%	50V
C422	1-126-176-11	ELECT	220uF	20%	10V
C470	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C471	1-124-261-00	ELECT	10uF	20%	50V
C500	1-104-665-11	ELECT	100uF	20%	10V
C501	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C502	1-124-589-11	ELECT	47uF	20%	16V
C503	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C504	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C505	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C506	1-124-584-00	ELECT	100uF	20%	10V
C507	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C508	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C509	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C510	1-124-261-00	ELECT	10uF	20%	50V
C511	1-124-261-00	ELECT	10uF	20%	50V
C512	1-124-261-00	ELECT	10uF	20%	50V

Ref. No.	Part No.	Description			Remarks
C513	1-124-261-00	ELECT	10uF	20%	50V
C514	1-128-551-11	ELECT	22uF	20%	25V
C515	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C516	1-126-964-11	ELECT	10uF	20%	50V
C517	1-124-589-11	ELECT	47uF	20%	16V
C518	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C519	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C520	1-104-905-11	CAPACITOR	0.22F		5.5V
C523	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C900	1-136-165-00	FILM	0.1uF	5%	50V
C901	1-136-165-00	FILM	0.1uF	5%	50V
C902	1-126-943-11	ELECT	2200uF	20%	25V
C903	1-126-943-11	ELECT	2200uF	20%	25V
C904	1-126-012-11	ELECT	470uF	20%	16V
C905	1-126-009-81	ELECT	100uF	20%	16V
C906	1-126-048-81	ELECT	10uF	20%	50V
C907	1-126-009-81	ELECT	100uF	20%	16V
C908	1-126-048-81	ELECT	10uF	20%	50V
C909	1-126-009-81	ELECT	100uF	20%	16V
C910	1-136-165-00	FILM	0.1uF	5%	50V
C911	1-117-850-11	ELECT	15000uF	20%	16V
C912	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C913	1-104-664-11	ELECT	47uF	20%	16V
C914	1-104-665-11	ELECT	100uF	20%	10V
C915	1-104-665-11	ELECT	100uF	20%	10V
C916	1-164-159-11	CERAMIC	0.1uF		50V
C917	1-126-934-11	ELECT	220uF	20%	10V
C919	1-126-934-11	ELECT	220uF	20%	10V
C920	1-126-934-11	ELECT	220uF	20%	10V
C922	1-126-934-11	ELECT	220uF	20%	10V
C928	1-126-926-11	ELECT	1000uF	20%	10V
C931	1-104-664-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
CN100	1-774-289-11	PIN, CONNECTOR (PC BOARD) 15P			
CN101	1-770-722-11	CONNECTOR, BOARD TO BOARD 6P (AEP, UK)			
CN300	1-691-650-11	SOCKET, CONNECTOR 19P			
CN301	1-691-649-11	SOCKET, CONNECTOR 17P			
* CN400	1-568-865-11	SOCKET, CONNECTOR 23P			
CN401	1-564-723-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CN402	1-564-723-11	PIN, CONNECTOR (SMALL TYPE) 7P			
* CN501	1-568-844-11	SOCKET, CONNECTOR 29P			
CN502	1-580-394-11	CONNECTOR, DIN 6P			
* CN503	1-566-856-11	SOCKET, CONNECTOR 5P			
* CN900	1-564-516-11	PLUG, CONNECTOR 13P			
* CN903	1-564-505-11	PLUG, CONNECTOR 2P			
		< DIODE >			
D151	8-719-911-19	DIODE 1SS119			
D301	8-719-200-82	DIODE 11ES2			
D302	8-719-200-82	DIODE 11ES2			
D303	8-719-911-19	DIODE 1SS119			
D304	8-719-911-19	DIODE 1SS119			
D305	8-719-911-19	DIODE 1SS119			
D306	8-719-210-21	DIODE 11EQS04			
D307	8-719-911-19	DIODE 1SS119			
D308	8-719-911-19	DIODE 1SS119			
D500	8-719-200-82	DIODE 11ES2			

Ref. No.	Part No.	Description	Remarks
D501	8-719-200-82	DIODE 11ES2	
D502	8-719-911-19	DIODE 1SS119	
D503	8-719-911-19	DIODE 1SS119	
D504	8-719-911-19	DIODE 1SS119	
D505	8-719-911-19	DIODE 1SS119	
D506	8-719-911-19	DIODE 1SS119	
D507	8-719-911-19	DIODE 1SS119	
D509	8-719-911-19	DIODE 1SS119	
D900	8-719-200-82	DIODE 11ES2	
D901	8-719-200-82	DIODE 11ES2	
D902	8-719-200-82	DIODE 11ES2	
D903	8-719-200-82	DIODE 11ES2	
D904	8-719-986-19	DIODE HZS11B3LTA	
D906	8-719-911-19	DIODE 1SS119	
D907	8-719-911-19	DIODE 1SS119	
D908	8-719-302-38	DIODE RBV-602-01	
D909	8-719-947-26	DIODE MTZJ-T-72-6.2C	
D910	8-719-200-82	DIODE 11ES2	
D911	8-719-200-82	DIODE 11ES2	
D914	8-719-200-82	DIODE 11ES2	
D915	8-719-200-82	DIODE 11ES2	
D916	8-719-911-19	DIODE 1SS119	
D923	8-719-200-82	DIODE 11ES2	
D924	8-719-911-19	DIODE 1SS119 (AEP, UK)	
D926	8-719-200-82	DIODE 11ES2	
		< TERMINAL >	
EPT901	1-537-770-21	TERMINAL BOARD, GROUND	
		< FERRITE BEAD >	
FB300	1-412-473-21	INDUCTOR 0UH	
FB401	1-412-473-21	INDUCTOR 0UH	
FB402	1-500-445-21	FERRITE 0UH	
FB403	1-216-295-91	SHORT 0	
FB404	1-412-473-21	INDUCTOR 0UH	
FB500	1-412-473-21	INDUCTOR 0UH	
FB501	1-412-473-21	INDUCTOR 0UH	
		< HEAT SINK >	
* HS900	3-309-144-21	HEAT SINK	
* HS908	3-309-144-21	HEAT SINK	
		< IC >	
IC100	8-759-495-24	IC M62442FP-TP	
IC300	8-759-577-07	IC uPD784215AYGF-502-3BA	
IC301	8-759-165-80	IC PST600C-T	
IC302	8-759-557-09	IC M5M5256DFP-70XL-TR7	
IC400	8-759-481-02	IC M62016L	
IC402	8-759-927-72	IC TL1591CP	
IC403	8-749-015-19	IC PHOTO COUPLER ON3131-SA.S0	
IC405	8-749-015-19	IC PHOTO COUPLER ON3131-SA.S0	
IC500	8-759-574-72	IC uPD784215AYGF506-3BA	
IC501	8-759-165-80	IC PST600C-T	
IC502	8-759-495-25	IC BA3833F-E2	
IC503	8-759-008-67	IC MC14066BF	
IC504	8-759-549-80	IC P82B715TD.118	
IC900	8-759-701-75	IC NJM7805FA	
IC901	8-759-450-47	IC BA05T	

MAIN

Ref. No.	Part No.	Description	Remarks
IC902	8-759-701-75	IC NJM7805FA	
IC903	8-759-604-90	IC M5F7907L	
IC904	8-759-450-47	IC BA05T	
		< JACK >	
J100	1-695-188-31	JACK, PIN 4P	
J101	1-774-822-11	JACK, PIN 2P	
		< JUMPER RESISTOR >	
JR319	1-216-295-91	SHORT 0	
JR401	1-216-295-91	SHORT 0	
JR403	1-216-295-91	SHORT 0	
JR404	1-216-295-91	SHORT 0	
JR501	1-216-295-91	SHORT 0 (AEP, UK)	
JR502	1-216-295-91	SHORT 0 (AEP, UK)	
JR503	1-216-295-91	SHORT 0 (JE, HK, SP, MY)	
JR504	1-216-295-91	SHORT 0 (US)	
JR505	1-216-295-91	SHORT 0	
JR506	1-216-295-91	SHORT 0	
JR507	1-216-295-91	SHORT 0 (JE, US, HK, SP, MY)	
JR508	1-216-295-91	SHORT 0 (JE, US, HK, SP, MY)	
JR509	1-216-295-91	SHORT 0	
JR510	1-216-295-91	SHORT 0	
JR511	1-216-296-91	SHORT 0	
JR512	1-216-296-91	SHORT 0	
		< COIL >	
L400	1-408-117-00	INDUCTOR 10uH	
L401	1-408-117-00	INDUCTOR 10uH	
		< TRANSISTOR >	
Q100	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q101	8-729-044-08	TRANSISTOR 2SD1915(F)-T(TA).SO	
Q200	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q201	8-729-044-08	TRANSISTOR 2SD1915(F)-T(TA).SO	
Q300	8-729-030-02	TRANSISTOR DTC144ESA	
Q301	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q400	8-729-900-80	TRANSISTOR DTC114ES	
Q401	8-729-922-37	TRANSISTOR 2SD2144S	
Q403	8-729-900-80	TRANSISTOR DTC114ES	
Q404	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q500	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q501	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q502	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q503	8-729-030-02	TRANSISTOR DTC144ESA	
Q504	8-729-422-73	TRANSISTOR UN4212	
Q505	8-729-422-73	TRANSISTOR UN4212	
Q506	8-729-025-28	TRANSISTOR 2SK1828	
Q507	8-729-025-28	TRANSISTOR 2SK1828	
Q508	8-729-025-28	TRANSISTOR 2SK1828	
Q509	8-729-030-02	TRANSISTOR DTC144ESA	
Q510	8-729-422-57	TRANSISTOR UN4111	
Q511	8-729-422-57	TRANSISTOR UN4111	
Q900	8-729-021-82	TRANSISTOR 2SD2396K	
Q901	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q903	8-729-111-29	TRANSISTOR 2SD1616A-K	
Q908	8-729-021-82	TRANSISTOR 2SD2396K	
Q909	8-729-422-73	TRANSISTOR UN4212	
Q910	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q911	8-729-040-20	TRANSISTOR RT1P137L-TP	
Q912	8-729-900-80	TRANSISTOR DTC114ES	

Ref. No.	Part No.	Description	Remarks
Q913	8-729-422-73	TRANSISTOR UN4212	
Q914	8-729-922-37	TRANSISTOR 2SD2144S	
Q915	8-729-922-37	TRANSISTOR 2SD2144S	
Q916	8-729-922-37	TRANSISTOR 2SD2144S	
Q917	8-729-922-37	TRANSISTOR 2SD2144S	
Q918	8-729-900-63	TRANSISTOR DTA124ES	
Q919	8-729-900-63	TRANSISTOR DTA124ES	
Q920	8-729-922-37	TRANSISTOR 2SD2144S	
Q921	8-729-922-37	TRANSISTOR 2SD2144S	
		< RESISTOR >	
R101	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R102	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R103	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R104	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R106	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R107	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R108	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R109	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R110	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R111	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R112	1-216-025-91	RES,CHIP 100 5% 1/10W	
R113	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R115	1-216-295-91	SHORT 0	
R116	1-216-121-91	RES,CHIP 1M 5% 1/10W	
R117	1-216-121-91	RES,CHIP 1M 5% 1/10W	
R122	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R123	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R152	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R157	1-216-121-91	RES,CHIP 1M 5% 1/10W	
R201	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R202	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R203	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R204	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R206	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R207	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R208	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R209	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R210	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R211	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R212	1-216-025-91	RES,CHIP 100 5% 1/10W	
R213	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R215	1-216-295-91	SHORT 0	
R218	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R219	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R220	1-216-105-91	RES,CHIP 220K 5% 1/10W	
R224	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R255	1-216-089-91	RES,CHIP 47K 5% 1/10W	
R304	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
R310	1-216-025-91	RES,CHIP 100 5% 1/10W	
R311	1-216-025-91	RES,CHIP 100 5% 1/10W	
R312	1-216-025-91	RES,CHIP 100 5% 1/10W	
R313	1-216-025-91	RES,CHIP 100 5% 1/10W	
R318	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R324	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R325	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R326	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R327	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R328	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R345	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R346	1-216-097-91	RES,CHIP 100K 5% 1/10W	

Ref. No.	Part No.	Description			Remarks
R347	1-216-089-91	RES,CHIP	47K	5%	1/10W
R348	1-216-089-91	RES,CHIP	47K	5%	1/10W
R400	1-216-073-00	METAL CHIP	10K	5%	1/10W
R403	1-216-049-91	RES,CHIP	1K	5%	1/10W
R406	1-216-023-00	METAL CHIP	82	5%	1/10W
R407	1-216-089-91	RES,CHIP	47K	5%	1/10W
R416	1-216-041-00	METAL CHIP	470	5%	1/10W
R417	1-216-041-00	METAL CHIP	470	5%	1/10W
R420	1-249-395-11	CARBON	15	5%	1/4W F
R421	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R470	1-249-395-11	CARBON	15	5%	1/4W F
R501	1-216-073-00	METAL CHIP	10K	5%	1/10W
R502	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R503	1-216-089-91	RES,CHIP	47K	5%	1/10W
R504	1-216-089-91	RES,CHIP	47K	5%	1/10W
R505	1-216-081-00	METAL CHIP	22K	5%	1/10W
R506	1-216-097-91	RES,CHIP	100K	5%	1/10W
R507	1-216-085-00	METAL CHIP	33K	5%	1/10W
R508	1-216-073-00	METAL CHIP	10K	5%	1/10W
R509	1-249-417-11	CARBON	1K	5%	1/4W F
R510	1-249-417-11	CARBON	1K	5%	1/4W F
R511	1-216-073-00	METAL CHIP	10K	5%	1/10W (JE, US, HK, SP, MY)
R512	1-216-073-00	METAL CHIP	10K	5%	1/10W (JE, US, HK, SP, MY)
R513	1-216-073-00	METAL CHIP	10K	5%	1/10W (US, AEP, UK)
R514	1-216-073-00	METAL CHIP	10K	5%	1/10W (JE, AEP, UK, HK, SP, MY)
R515	1-216-049-91	RES,CHIP	1K	5%	1/10W
R516	1-216-049-91	RES,CHIP	1K	5%	1/10W
R517	1-216-049-91	RES,CHIP	1K	5%	1/10W
R518	1-216-049-91	RES,CHIP	1K	5%	1/10W
R519	1-216-049-91	RES,CHIP	1K	5%	1/10W
R520	1-216-049-91	RES,CHIP	1K	5%	1/10W
R521	1-216-049-91	RES,CHIP	1K	5%	1/10W
R522	1-216-049-91	RES,CHIP	1K	5%	1/10W
R523	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R530	1-216-109-00	METAL CHIP	330K	5%	1/10W
R534	1-216-077-00	METAL CHIP	15K	5%	1/10W
R541	1-216-049-91	RES,CHIP	1K	5%	1/10W
R544	1-249-417-11	CARBON	1K	5%	1/4W F
R545	1-249-417-11	CARBON	1K	5%	1/4W F
R547	1-216-025-91	RES,CHIP	100	5%	1/10W
R549	1-216-025-91	RES,CHIP	100	5%	1/10W
R551	1-216-025-91	RES,CHIP	100	5%	1/10W
R553	1-216-077-00	METAL CHIP	15K	5%	1/10W
R554	1-216-073-00	METAL CHIP	10K	5%	1/10W
R555	1-216-077-00	METAL CHIP	15K	5%	1/10W
R556	1-216-073-00	METAL CHIP	10K	5%	1/10W
R557	1-216-077-00	METAL CHIP	15K	5%	1/10W
R558	1-216-073-00	METAL CHIP	10K	5%	1/10W
R564	1-216-049-91	RES,CHIP	1K	5%	1/10W
⚠R566	1-249-401-11	CARBON	47	5%	1/4W F
R567	1-216-103-00	METAL CHIP	180K	5%	1/10W
R568	1-216-077-00	METAL CHIP	15K	5%	1/10W
R569	1-216-073-00	METAL CHIP	10K	5%	1/10W
R570	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R576	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R577	1-216-073-00	METAL CHIP	10K	5%	1/10W
R579	1-216-073-00	METAL CHIP	10K	5%	1/10W
R580	1-216-073-00	METAL CHIP	10K	5%	1/10W
R581	1-216-073-00	METAL CHIP	10K	5%	1/10W
R582	1-216-073-00	METAL CHIP	10K	5%	1/10W
R586	1-216-073-00	METAL CHIP	10K	5%	1/10W
R591	1-216-073-00	METAL CHIP	10K	5%	1/10W
R592	1-216-073-00	METAL CHIP	10K	5%	1/10W
⚠R900	1-212-942-00	FUSIBLE	2.2	5%	1/2W F
⚠R901	1-212-942-00	FUSIBLE	2.2	5%	1/2W F
⚠R902	1-219-153-11	FUSIBLE	10	5%	1/4W F
R904	1-249-411-11	CARBON	330	5%	1/4W
R910	1-249-411-11	CARBON	330	5%	1/4W
R912	1-216-049-91	RES,CHIP	1K	5%	1/10W
R913	1-216-049-91	RES,CHIP	1K	5%	1/10W
R914	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R916	1-249-417-11	CARBON	1K	5%	1/4W F
⚠R917	1-217-637-00	FUSIBLE	1	5%	1/4W F
R918	1-249-397-11	CARBON	22	5%	1/4W F
R919	1-249-413-11	CARBON	470	5%	1/4W F
R920	1-247-840-00	CARBON	2.4K	5%	1/4W
R925	1-249-429-11	CARBON	10K	5%	1/4W
R928	1-249-429-11	CARBON	10K	5%	1/4W
R931	1-249-429-11	CARBON	10K	5%	1/4W
R935	1-249-390-11	CARBON	5.6	5%	1/4W F (US, AEP, UK)
R935	1-249-393-11	CARBON	10	5%	1/4W F (JE, HK, SP, MY)
R936	1-249-417-11	CARBON	1K	5%	1/4W F
R1118	1-249-419-11	CARBON	1.5K	5%	1/4W F
R1119	1-249-433-11	CARBON	22K	5%	1/4W
R1120	1-247-887-00	CARBON	220K	5%	1/4W
R1121	1-249-437-11	CARBON	47K	5%	1/4W
R1124	1-249-429-11	CARBON	10K	5%	1/4W
R1125	1-249-437-11	CARBON	47K	5%	1/4W
R1151	1-247-843-11	CARBON	3.3K	5%	1/4W
R1153	1-247-807-31	CARBON	100	5%	1/4W
R1154	1-247-807-31	CARBON	100	5%	1/4W
R1155	1-247-807-31	CARBON	100	5%	1/4W
R1156	1-249-441-11	CARBON	100K	5%	1/4W
R1216	1-247-903-00	CARBON	1M	5%	1/4W
R1217	1-247-903-00	CARBON	1M	5%	1/4W
R1221	1-249-437-11	CARBON	47K	5%	1/4W
R1222	1-249-421-11	CARBON	2.2K	5%	1/4W F
R1223	1-249-429-11	CARBON	10K	5%	1/4W
R1300	1-249-413-11	CARBON	470	5%	1/4W F
R1301	1-249-429-11	CARBON	10K	5%	1/4W
R1302	1-249-425-11	CARBON	4.7K	5%	1/4W F
R1305	1-247-807-31	CARBON	100	5%	1/4W
R1306	1-249-417-11	CARBON	1K	5%	1/4W F
R1307	1-249-417-11	CARBON	1K	5%	1/4W F
R1308	1-247-807-31	CARBON	100	5%	1/4W
R1309	1-247-807-31	CARBON	100	5%	1/4W
R1314	1-247-807-31	CARBON	100	5%	1/4W
R1315	1-247-807-31	CARBON	100	5%	1/4W
R1316	1-247-807-31	CARBON	100	5%	1/4W
R1317	1-247-807-31	CARBON	100	5%	1/4W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MAIN | MECH RELAY | OUT SW

Ref. No.	Part No.	Description			Remarks
R1319	1-247-807-31	CARBON	100	5%	1/4W
R1320	1-247-807-31	CARBON	100	5%	1/4W
R1321	1-247-807-31	CARBON	100	5%	1/4W
R1322	1-247-807-31	CARBON	100	5%	1/4W
R1323	1-247-807-31	CARBON	100	5%	1/4W
R1329	1-247-807-31	CARBON	100	5%	1/4W
R1330	1-247-807-31	CARBON	100	5%	1/4W
R1331	1-247-807-31	CARBON	100	5%	1/4W
R1332	1-247-807-31	CARBON	100	5%	1/4W
R1333	1-247-807-31	CARBON	100	5%	1/4W
R1334	1-247-807-31	CARBON	100	5%	1/4W
R1335	1-247-807-31	CARBON	100	5%	1/4W
R1336	1-247-807-31	CARBON	100	5%	1/4W
R1337	1-249-429-11	CARBON	10K	5%	1/4W
R1338	1-249-429-11	CARBON	10K	5%	1/4W
R1339	1-249-429-11	CARBON	10K	5%	1/4W
R1340	1-249-429-11	CARBON	10K	5%	1/4W
R1341	1-249-429-11	CARBON	10K	5%	1/4W
R1343	1-249-429-11	CARBON	10K	5%	1/4W
R1344	1-249-441-11	CARBON	100K	5%	1/4W
R1349	1-249-417-11	CARBON	1K	5%	1/4W F
R1350	1-249-429-11	CARBON	10K	5%	1/4W
R1351	1-249-429-11	CARBON	10K	5%	1/4W
R1352	1-249-429-11	CARBON	10K	5%	1/4W
R1353	1-247-807-31	CARBON	100	5%	1/4W
R1354	1-249-429-11	CARBON	10K	5%	1/4W
R1401	1-249-417-11	CARBON	1K	5%	1/4W F
R1402	1-249-417-11	CARBON	1K	5%	1/4W F
R1404	1-247-807-31	CARBON	100	5%	1/4W
R1408	1-247-807-31	CARBON	100	5%	1/4W
R1409	1-249-408-11	CARBON	180	5%	1/4W F
R1410	1-249-429-11	CARBON	10K	5%	1/4W
R1411	1-249-429-11	CARBON	10K	5%	1/4W
R1412	1-249-409-11	CARBON	220	5%	1/4W F
R1413	1-249-409-11	CARBON	220	5%	1/4W F
R1421	1-249-433-11	CARBON	22K	5%	1/4W
R1500	1-249-413-11	CARBON	470	5%	1/4W F
R1523	1-247-807-31	CARBON	100	5%	1/4W
R1524	1-247-807-31	CARBON	100	5%	1/4W
R1525	1-247-807-31	CARBON	100	5%	1/4W
R1526	1-249-417-11	CARBON	1K	5%	1/4W F
R1527	1-247-807-31	CARBON	100	5%	1/4W
R1528	1-247-807-31	CARBON	100	5%	1/4W
R1529	1-247-807-31	CARBON	100	5%	1/4W
R1531	1-249-417-11	CARBON	1K	5%	1/4W F (AEP, UK)
R1532	1-249-417-11	CARBON	1K	5%	1/4W F (AEP, UK)
R1533	1-249-413-11	CARBON	470	5%	1/4W F
R1535	1-249-431-11	CARBON	15K	5%	1/4W
R1536	1-249-431-11	CARBON	15K	5%	1/4W
R1537	1-249-417-11	CARBON	1K	5%	1/4W F
R1538	1-249-417-11	CARBON	1K	5%	1/4W F
R1539	1-249-417-11	CARBON	1K	5%	1/4W F
R1540	1-249-417-11	CARBON	1K	5%	1/4W F
R1542	1-249-417-11	CARBON	1K	5%	1/4W F
R1543	1-249-417-11	CARBON	1K	5%	1/4W F
R1546	1-249-421-11	CARBON	2.2K	5%	1/4W F
R1548	1-249-421-11	CARBON	2.2K	5%	1/4W F
R1550	1-249-421-11	CARBON	2.2K	5%	1/4W F
R1552	1-249-417-11	CARBON	1K	5%	1/4W F
R1559	1-249-417-11	CARBON	1K	5%	1/4W F
R1560	1-249-417-11	CARBON	1K	5%	1/4W F
R1561	1-249-417-11	CARBON	1K	5%	1/4W F
R1562	1-249-417-11	CARBON	1K	5%	1/4W F
R1563	1-249-417-11	CARBON	1K	5%	1/4W F
R1565	1-249-417-11	CARBON	1K	5%	1/4W F
R1571	1-249-437-11	CARBON	47K	5%	1/4W
R1573	1-247-843-11	CARBON	3.3K	5%	1/4W
R1574	1-249-429-11	CARBON	10K	5%	1/4W
R1583	1-249-417-11	CARBON	1K	5%	1/4W F
R1584	1-249-433-11	CARBON	22K	5%	1/4W
R1585	1-249-429-11	CARBON	10K	5%	1/4W
R1590	1-249-417-11	CARBON	1K	5%	1/4W F

< THERMISTOR(POSITIVE) >

THP902	1-801-578-11	THERMISTOR, POSITIVE

< VIBRATOR >

X300	1-767-661-11	VIBRATOR, CERAMIC 12.5MHz
X500	1-767-661-11	VIBRATOR, CERAMIC 12.5MHz
X501	1-567-098-41	VIBRATOR, CRYSTAL 32.768KHz

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*	1-671-468-01	MECH RELAY BOARD
		**********

< CAPACITOR >

C550	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C551	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C553	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C554	1-163-038-91	CERAMIC CHIP	0.1uF		25V

< CONNECTOR >

CN550	1-784-335-11	CONNECTOR (FFC) 21P
CN551	1-695-368-31	CONNECTOR, FFC/FPC 7P
CN552	1-695-374-31	CONNECTOR, FFC/FPC 13P

< IC >

IC550	8-759-040-83	IC BA6287F
IC551	8-759-040-83	IC BA6287F

< RESISTOR >

R550	1-216-296-91	SHORT	0
R551	1-216-296-91	SHORT	0
R552	1-216-296-91	SHORT	0

****

*	1-671-503-12	OUT SW BOARD
		**********

< CONNECTOR >

* CN709	1-568-943-11	PIN, CONNECTOR 5P
CN715	1-506-481-11	PIN, CONNECTOR 2P

< SWITCH >

S701	1-771-218-11	SWITCH, MICRO(MID OUT)
S702	1-771-218-11	SWITCH, MICRO(LID)

****

Ref. No.	Part No.	Description			Remarks
*	A-4417-173-A	PANEL BOARD, COMPLETE **********			
*	4-212-215-02	HOLDER (FL)			
*	4-212-216-01	HOLDER (LED)			
*	4-934-853-01	CUSHION			
		< CAPACITOR >			
C701	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C702	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C703	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C704	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C705	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C706	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C707	1-124-248-00	ELECT	22uF	20%	35V
C708	1-124-261-00	ELECT	10uF	20%	50V
C709	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C710	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C711	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C712	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C713	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C715	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C716	1-124-248-00	ELECT	22uF	20%	35V
C717	1-126-160-11	ELECT	1uF	20%	50V
C718	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C719	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C720	1-126-160-11	ELECT	1uF	20%	50V
C721	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C722	1-126-160-11	ELECT	1uF	20%	50V
C723	1-124-261-00	ELECT	10uF	20%	50V
C724	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C725	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C726	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C727	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C728	1-124-261-00	ELECT	10uF	20%	50V
C729	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C730	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C731	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C732	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C733	1-124-589-11	ELECT	47uF	20%	16V
C734	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C739	1-126-160-11	ELECT	1uF	20%	50V
C740	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C741	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C742	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C743	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C744	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C745	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C746	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
		< CONNECTOR >			
* CN701	1-568-844-11	SOCKET, CONNECTOR 29P			
CN702	1-785-288-11	CONNECTOR, BOARD TO BOARD 6P			
CN703	1-785-288-11	CONNECTOR, BOARD TO BOARD 6P			
		< DIODE >			
D703	8-719-058-04	DIODE SEL5223S-TP15(SELECT SYNC)			
D704	8-719-058-04	DIODE SEL5223S-TP15(SEAMLESS)			
D705	8-719-058-04	DIODE SEL5223S-TP15(HITPARADE)			
D707	8-719-058-04	DIODE SEL5223S-TP15(MULTI JOG)			
D708	8-719-058-04	DIODE SEL5223S-TP15(CURSOL)			

Ref. No.	Part No.	Description			Remarks
D709	8-719-058-04	DIODE SEL5223S-TP15 (ENTER/YES)			
D710	8-719-057-97	DIODE SEL5923A-TP15 (GROOVE)			
D711	8-719-058-04	DIODE SEL5223S-TP15 (MD WALKMAN)			
D712	8-719-056-13	DIODE SML79423C-TP15 (MD1)			
D713	8-719-056-13	DIODE SML79423C-TP15 (MD2)			
D714	8-719-056-13	DIODE SML79423C-TP15 (MD3)			
D715	8-719-056-13	DIODE SML79423C-TP15 (MD4)			
D716	8-719-056-13	DIODE SML79423C-TP15 (MD5)			
D717	8-719-056-13	DIODE SML79423C-TP15 (MD PLAY/PAUSE)			
D718	8-719-056-13	DIODE SML79423C-TP15 (CD1)			
D719	8-719-056-13	DIODE SML79423C-TP15 (CD2)			
D720	8-719-056-13	DIODE SML79423C-TP15 (CD3)			
D721	8-719-056-13	DIODE SML79423C-TP15 (CD4)			
D722	8-719-056-13	DIODE SML79423C-TP15 (CD5)			
D723	8-719-056-13	DIODE SML79423C-TP15 (CD PLAY/PAUSE)			
		< FILTER >			
FL701	1-517-796-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC701	8-759-297-23	IC M66004M8FP			
IC702	8-759-297-23	IC M66004M8FP			
IC703	8-759-448-24	IC NJU3718G (TE2)			
IC704	8-759-448-24	IC NJU3718G (TE2)			
IC705	8-759-339-53	IC GP1U28XB			
		< TRANSISTOR >			
Q701	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q702	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q703	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q704	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q705	8-729-900-63	TRANSISTOR DTA124ES			
Q706	8-729-900-63	TRANSISTOR DTA124ES			
Q707	8-729-900-63	TRANSISTOR DTA124ES			
		< RESISTOR >			
R650	1-216-025-91	RES,CHIP	100	5%	1/10W
R651	1-216-025-91	RES,CHIP	100	5%	1/10W
R652	1-216-025-91	RES,CHIP	100	5%	1/10W
R653	1-216-025-91	RES,CHIP	100	5%	1/10W
R701	1-216-049-91	RES,CHIP	1K	5%	1/10W
R702	1-216-097-91	RES,CHIP	100K	5%	1/10W
R703	1-216-049-91	RES,CHIP	1K	5%	1/10W
R704	1-216-097-91	RES,CHIP	100K	5%	1/10W
R705	1-216-097-91	RES,CHIP	100K	5%	1/10W
R706	1-216-085-00	METAL CHIP	33K	5%	1/10W
R707	1-216-049-91	RES,CHIP	1K	5%	1/10W
R708	1-216-049-91	RES,CHIP	1K	5%	1/10W
R709	1-216-097-91	RES,CHIP	100K	5%	1/10W
R710	1-216-097-91	RES,CHIP	100K	5%	1/10W
R711	1-216-025-91	RES,CHIP	100	5%	1/10W
R712	1-216-001-00	METAL CHIP	10	5%	1/10W
R715	1-216-037-00	METAL CHIP	330	5%	1/10W
R716	1-216-037-00	METAL CHIP	330	5%	1/10W
R717	1-216-037-00	METAL CHIP	330	5%	1/10W
R719	1-216-037-00	METAL CHIP	330	5%	1/10W
R720	1-216-037-00	METAL CHIP	330	5%	1/10W
R721	1-216-037-00	METAL CHIP	330	5%	1/10W
R722	1-216-029-00	METAL CHIP	150	5%	1/10W
R723	1-216-037-00	METAL CHIP	330	5%	1/10W
R724	1-216-033-00	METAL CHIP	220	5%	1/10W

PANEL

Ref. No.	Part No.	Description			Remarks
R725	1-216-029-00	METAL CHIP	150	5%	1/10W
R726	1-216-033-00	METAL CHIP	220	5%	1/10W
R727	1-216-029-00	METAL CHIP	150	5%	1/10W
R728	1-216-033-00	METAL CHIP	220	5%	1/10W
R729	1-216-029-00	METAL CHIP	150	5%	1/10W
R730	1-216-033-00	METAL CHIP	220	5%	1/10W
R731	1-216-029-00	METAL CHIP	150	5%	1/10W
R732	1-216-033-00	METAL CHIP	220	5%	1/10W
R733	1-216-029-00	METAL CHIP	150	5%	1/10W
R734	1-216-033-00	METAL CHIP	220	5%	1/10W
R735	1-216-029-00	METAL CHIP	150	5%	1/10W
R736	1-216-033-00	METAL CHIP	220	5%	1/10W
R737	1-216-029-00	METAL CHIP	150	5%	1/10W
R738	1-216-033-00	METAL CHIP	220	5%	1/10W
R739	1-216-029-00	METAL CHIP	150	5%	1/10W
R740	1-216-033-00	METAL CHIP	220	5%	1/10W
R741	1-216-029-00	METAL CHIP	150	5%	1/10W
R742	1-216-033-00	METAL CHIP	220	5%	1/10W
R743	1-216-029-00	METAL CHIP	150	5%	1/10W
R744	1-216-033-00	METAL CHIP	220	5%	1/10W
R745	1-216-029-00	METAL CHIP	150	5%	1/10W
R746	1-216-033-00	METAL CHIP	220	5%	1/10W
R747	1-216-029-00	METAL CHIP	150	5%	1/10W
R749	1-216-041-00	METAL CHIP	470	5%	1/10W
R750	1-216-045-00	METAL CHIP	680	5%	1/10W
R751	1-216-049-91	RES,CHIP	1K	5%	1/10W
R752	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R753	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R754	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R755	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R756	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R757	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R758	1-216-073-00	METAL CHIP	10K	5%	1/10W
R759	1-216-077-00	METAL CHIP	15K	5%	1/10W
R760	1-216-081-00	METAL CHIP	22K	5%	1/10W
R761	1-216-085-00	METAL CHIP	33K	5%	1/10W
R762	1-216-093-00	METAL CHIP	68K	5%	1/10W
R763	1-216-099-00	METAL CHIP	120K	5%	1/10W
R765	1-216-041-00	METAL CHIP	470	5%	1/10W
R766	1-216-045-00	METAL CHIP	680	5%	1/10W
R767	1-216-049-91	RES,CHIP	1K	5%	1/10W
R768	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R769	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R770	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R771	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R772	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R773	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R774	1-216-073-00	METAL CHIP	10K	5%	1/10W
R775	1-216-077-00	METAL CHIP	15K	5%	1/10W
R776	1-216-081-00	METAL CHIP	22K	5%	1/10W
R777	1-216-085-00	METAL CHIP	33K	5%	1/10W
R778	1-216-093-00	METAL CHIP	68K	5%	1/10W
R779	1-216-099-00	METAL CHIP	120K	5%	1/10W
R780	1-216-049-91	RES,CHIP	1K	5%	1/10W
R781	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R782	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R783	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R784	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R785	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R786	1-216-069-00	METAL CHIP	6.8K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R787	1-216-073-00	METAL CHIP	10K	5%	1/10W
R788	1-216-077-00	METAL CHIP	15K	5%	1/10W
R789	1-216-081-00	METAL CHIP	22K	5%	1/10W
R790	1-216-085-00	METAL CHIP	33K	5%	1/10W
R795	1-216-025-91	RES,CHIP	100	5%	1/10W
R796	1-216-025-91	RES,CHIP	100	5%	1/10W
R797	1-216-025-91	RES,CHIP	100	5%	1/10W
R798	1-216-025-91	RES,CHIP	100	5%	1/10W
R799	1-216-025-91	RES,CHIP	100	5%	1/10W
R907	1-216-097-91	RES,CHIP	100K	5%	1/10W

< SWITCH >

S703	1-762-196-21	SWITCH, TACT (CD STOP)
S704	1-762-196-21	SWITCH, TACT (CD PLAY/PAUSE)
S705	1-762-196-21	SWITCH, TACT (CD5)
S706	1-762-196-21	SWITCH, TACT (CD4)
S707	1-762-196-21	SWITCH, TACT (CD3)
S708	1-762-196-21	SWITCH, TACT (CD2)
S709	1-762-196-21	SWITCH, TACT (CD1)
S710	1-762-196-21	SWITCH, TACT (FUNCTION)
S711	1-762-196-21	SWITCH, TACT (MD1)
S712	1-762-196-21	SWITCH, TACT (MD2)
S713	1-762-196-21	SWITCH, TACT (MD3)
S714	1-762-196-21	SWITCH, TACT (MD4)
S715	1-762-196-21	SWITCH, TACT (MD5)
S716	1-762-196-21	SWITCH, TACT (MD PLAY/PAUSE)
S717	1-762-196-21	SWITCH, TACT (MD STOP)
S718	1-762-196-21	SWITCH, TACT (REW)
S719	1-762-196-21	SWITCH, TACT (FF)
S720	1-762-196-21	SWITCH, TACT (CLEAR)
S721	1-762-196-21	SWITCH, TACT (MENU/NO)
S722	1-762-196-21	SWITCH, TACT (ENTER/YES)
S723	1-762-196-21	SWITCH, TACT (REPEAT STEREO/MONO)
S724	1-762-196-21	SWITCH, TACT (1/ALL)
S725	1-762-196-21	SWITCH, TACT (PLAYMODE TUNINGMODE)
S726	1-762-196-21	SWITCH, TACT (GROOVE)
S727	1-762-196-21	SWITCH, TACT (MD WALKMAN SYNC)
S728	1-762-196-21	SWITCH, TACT (REC MODE)
S729	1-762-196-21	SWITCH, TACT (REC)
S730	1-762-196-21	SWITCH, TACT (CD DISPLAY)
S731	1-762-196-21	SWITCH, TACT (MD EJECT)
S732	1-762-196-21	SWITCH, TACT (TUNER/BAND)
S733	1-762-196-21	SWITCH, TACT (DBFB)
S737	1-762-196-21	SWITCH, TACT (SELECT SYNC)
S738	1-762-196-21	SWITCH, TACT (SEAMLESS)
S739	1-762-196-21	SWITCH, TACT (HITPARADE)
S740	1-762-196-21	SWITCH, TACT (REC IT)
S741	1-762-196-21	SWITCH, TACT (NAME EDIT/CHARACTER)
S742	1-762-196-21	SWITCH, TACT (PRESET EQ)
S743	1-762-196-21	SWITCH, TACT (CD1 EJECT)
S744	1-762-196-21	SWITCH, TACT (CD2 EJECT)
S745	1-762-196-21	SWITCH, TACT (CD3 EJECT)
S746	1-762-196-21	SWITCH, TACT (CD4 EJECT)
S747	1-762-196-21	SWITCH, TACT (CD5 EJECT)
S748	1-762-196-21	SWITCH, TACT (MD DISPLAY)

****

Ref. No.	Part No.	Description			Remarks
*	1-671-292-11	POWER KEY BOARD			
		**********			
		< DIODE >			
D701	8-719-056-13	DIODE SML72423C-TP4			
D702	8-719-058-04	DIODE SEL5223S-TP15			
		< TRANSISTOR >			
Q708	8-729-422-61	TRANSISTOR UN4115			
		< RESISTOR >			
R713	1-216-033-00	METAL CHIP	220	5%	1/10W
R714	1-216-037-00	METAL CHIP	330	5%	1/10W
R718	1-216-073-00	METAL CHIP	10K	5%	1/10W
R791	1-216-041-00	METAL CHIP	470	5%	1/10W
R792	1-216-045-00	METAL CHIP	680	5%	1/10W
R794	1-216-043-91	RES,CHIP	560	5%	1/10W
		< SWITCH >			
S734	1-762-196-21	SWITCH, TACT(POWER)			
S735	1-762-196-21	SWITCH, TACT(CLOCK/TIMER)			
S736	1-762-196-21	SWITCH, TACT(TIMER SELECT)			
**********					
*	1-671-301-11	RDS BOARD (AEP, UK)			
		**********			
		< CAPACITOR >			
C633	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C634	1-126-964-11	ELECT	10uF	20%	50V
C635	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C636	1-126-964-11	ELECT	10uF	20%	50V
C637	1-126-961-11	ELECT	2.2uF	20%	50V
C638	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C639	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C640	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C641	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C642	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C643	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C644	1-126-961-11	ELECT	2.2uF	20%	50V
C662	1-104-664-11	ELECT	47uF	20%	10V
		< CONNECTOR >			
CN630	1-770-726-11	CONNECTOR, BOARD TO BOARD 6P			
		< DIODE >			
D630	8-719-988-62	DIODE 1SS355			
		< IC >			
IC630	8-759-636-55	IC M5218AFP			
IC631	8-759-450-88	IC BU1922-E2			
		< RESISTOR >			
R630	1-249-405-11	CARBON	100	5%	1/4W F
R631	1-216-079-00	METAL CHIP	18K	5%	1/10W
R632	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R633	1-216-097-91	RES,CHIP	100K	5%	1/10W
R634	1-216-097-91	RES,CHIP	100K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R635	1-249-397-11	CARBON	22	5%	1/4W F
R636	1-216-025-91	RES,CHIP	100	5%	1/10W
R637	1-216-025-91	RES,CHIP	100	5%	1/10W
R638	1-216-049-91	RES,CHIP	1K	5%	1/10W
R640	1-216-121-91	RES,CHIP	1M	5%	1/10W
		< VIBRATOR >			
X630	1-579-900-21	VIBRATOR, CRYSTAL 4.332MHz			
**********					
*	1-671-299-11	REG BOARD			
		**********			
		< CAPACITOR >			
C990	1-126-964-11	ELECT	10uF	20%	50V
C991	1-104-665-11	ELECT	100uF	20%	10V
		< CONNECTOR >			
* CN990	1-564-521-11	PLUG, CONNECTOR 6P			
		< TRANSISTOR >			
Q990	8-729-046-26	TRANSISTOR 2SC5099-OPY			
Q991	8-729-422-73	TRANSISTOR UN4212			
Q992	8-729-620-05	TRANSISTOR 2SC2603-EF			
Q993	8-729-900-63	TRANSISTOR DTA124ES			
Q994	8-729-922-37	TRANSISTOR 2SD2144S			
		< RESISTOR >			
⚠R990	1-219-120-11	FUSIBLE	0.15	5%	1/4W F
⚠R991	1-247-843-11	CARBON	3.3K	5%	1/4W
R992	1-249-422-11	CARBON	2.7K	5%	1/4W F
R993	1-249-417-11	CARBON	1K	5%	1/4W F
R995	1-249-415-11	CARBON	680	5%	1/4W F
R996	1-249-409-11	CARBON	220	5%	1/4W F
**********					
*	1-671-789-12	SENSOR 2 BOARD			
		**********			
	4-964-461-02	HOLDER (SENSOR)			
		< TRANSISTOR >			
Q703	8-729-926-31	PHOTO TRANSISTOR PT483F1S			
**********					
*	1-671-504-12	SENSOR BOARD			
		**********			
		< CONNECTOR >			
CN708	1-506-481-11	PIN, CONNECTOR 2P			
		< DIODE >			
D704	8-719-055-84	DIODE GL-528VS1			
		< RESISTOR >			
R711	1-249-415-11	CARBON	680	5%	1/4W F
**********					

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SP **SW** **TRANS-A** **TRANS-B**

Ref. No.	Part No.	Description			Remarks
*	1-671-296-11	SP BOARD			
		*********			
		< CAPACITOR >			
C811	1-136-153-00	FILM	0.01uF	5%	50V
C812	1-136-153-00	FILM	0.01uF	5%	50V
C861	1-136-153-00	FILM	0.01uF	5%	50V
C862	1-136-153-00	FILM	0.01uF	5%	50V
		< CONNECTOR >			
* CN806	1-564-519-11	PLUG, CONNECTOR 4P			
		< RESISTOR >			
R817	1-260-076-11	CARBON	10	5%	1/2W
R867	1-260-076-11	CARBON	10	5%	1/2W
		< TERMINAL >			
TB800	1-537-822-31	TERMINAL BOARD (SP) (SPEAKER)			
**********					
*	1-671-467-01	SW BOARD			
		*********			
		< CONNECTOR >			
* CN206	1-750-494-31	PIN, CONNECTOR (PC BOARD) 6P			
		< SWITCH >			
S681	1-572-467-61	SWITCH, PUSH (1 KEY) (LIMIT)			
S682	1-692-377-31	SWITCH, PUSH (1 KEY) (REFRECT)			
S683	1-692-847-21	SWITCH, PUSH (1 KEY) (PROTECT)			
**********					
*	1-671-302-11	TRANS-A BOARD			
		**********			
	1-533-293-11	FUSE HOLDER			
		< CAPACITOR >			
C960	1-128-554-11	ELECT	330uF	20%	63V
C961	1-128-552-51	ELECT	47uF	20%	63V
C962	1-126-967-11	ELECT	47uF	20%	50V
C963	1-126-942-61	ELECT	1000uF	20%	25V
C964	1-104-665-11	ELECT	100uF	20%	10V
C965	1-126-963-11	ELECT	4.7uF	20%	50V
⚠C966	1-113-925-11	CERAMIC	0.01uF	20%	250V (JE, HK, SP, MY)
⚠C967	1-113-925-11	CERAMIC	0.01uF	20%	250V (US, AEP, UK)
		< CONNECTOR >			
CN960	1-774-108-11	PIN, CONNECTOR (PC BOARD)			
		< DIODE >			
D960	8-719-200-82	DIODE 11ES2			
D961	8-719-200-82	DIODE 11ES2			
D962	8-719-200-82	DIODE 11ES2			
D963	8-719-200-82	DIODE 11ES2			
D964	8-719-983-91	DIODE MTZJ-T-72-36A			

Ref. No.	Part No.	Description			Remarks
D965	8-719-947-16	DIODE MTZJ-T-72-5.1A			
D966	8-719-200-82	DIODE 11ES2			
D967	8-719-200-82	DIODE 11ES2			
D968	8-719-200-82	DIODE 11ES2			
D969	8-719-200-82	DIODE 11ES2			
D970	8-719-200-82	DIODE 11ES2			
D971	8-719-911-19	DIODE 1SS119			
D972	8-719-911-19	DIODE 1SS119			
D973	8-719-911-19	DIODE 1SS119			
D974	8-719-911-19	DIODE 1SS119			
⚠D975	8-719-911-19	DIODE 1SS119 (JE, HK, SP, MY)			
⚠D976	8-719-911-19	DIODE 1SS119 (US, AEP, UK)			
		< FUSE >			
⚠F960	1-533-419-11	FUSE, CLASS CYLINDRICAL (DIA.5) 4A 125V (US)			
		< IC >			
IC960	8-759-450-47	IC BA05T			
		< TRANSISTOR >			
Q960	8-729-018-59	TRANSISTOR 2SB1375-LC			
Q961	8-729-040-19	TRANSISTOR RT1N137L-TP			
Q963	8-729-900-65	TRANSISTOR DTA144ES			
Q964	8-729-900-80	TRANSISTOR DTC114ES			
		< RESISTOR >			
R960	1-202-725-00	SOLID	3.3M	10%	1/2W (US)
⚠R963	1-247-754-11	CARBON	1.5K	5%	1/2W F
R969	1-249-429-11	CARBON	10K	5%	1/4W
R970	1-249-411-11	CARBON	330	5%	1/4W
R971	1-249-411-11	CARBON	330	5%	1/4W
R972	1-247-843-11	CARBON	3.3K	5%	1/4W
R973	1-249-429-11	CARBON	10K	5%	1/4W
R974	1-249-437-11	CARBON	47K	5%	1/4W
		< RELAY >			
⚠RY960	1-755-276-11	RELAY, POWER (US, AEP, UK)			
⚠RY961	1-755-276-11	RELAY, POWER (JE, HK, SP, MY)			
**********					
*	1-671-303-11	TRANS-B BOARD			
		**********			
	1-533-293-11	FUSE HOLDER			
		< CONNECTOR >			
* CN961	1-564-528-11	PLUG, CONNECTOR 13P			
* CN962	1-564-518-11	PLUG, CONNECTOR 3P			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks
		< FUSE >	
⚠F961	1-532-464-31	FUSE TIME LAG 2.5A 250V (JE, HK, SP, MY)	
⚠F962	1-532-504-31	FUSE TIME LAG 4.0A 250V (JE, AEP, UK, HK, SP, MY)	
⚠F962	1-533-420-11	FUSE, GLASS CYLINDRICAL (DIA.5) 5.0A 125V (US)	
⚠F963	1-532-504-31	FUSE TIME LAG 4.0A 250V (JE, AEP, UK, HK, SP, MY)	
⚠F963	1-533-420-11	FUSE, GLASS CYLINDRICAL (DIA.5) 5.0A 125V (US)	
⚠F964	1-532-506-31	FUSE TIME LAG 6.3A 250V (SP, MY)	
**********			
*	1-671-304-11	TRANS-C BOARD	
		**********	
		< TRANSFORMER >	
⚠T961	1-433-438-11	TRANSFORMER, POWER (US)	
⚠T961	1-433-436-11	TRANSFORMER, POWER (AEP, UK)	
⚠T961	1-433-437-11	TRANSFORMER, POWER (JE, HK, SP, MY)	
**********			
*	1-671-860-11	TRANS-D BOARD (JE, HK, SP, MY)	
		**********	
		< CONNECTOR >	
* CN965	1-564-687-11	PIN, CONNECTOR 3P	
CN966	1-564-321-00	PIN, CONNECTOR 2P	
		< SWITCH >	
S960	1-554-752-11	SELECTOR, POWER VOLTAGE (VOLTAGE SELECTOR)	
**********			
*	1-671-305-11	WM BOARD	
		**********	
		< CAPACITOR >	
C1	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C2	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C3	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C4	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
		< CONNECTOR >	
CN1	1-785-568-21	PIN, CONNECTOR (PC BOARD) 8P	
		< JACK >	
J1	1-785-382-21	JACK, MINIATURE (+ CONNECTOR) 4P (MD WALKMAN LINK)	
		< RESISTOR >	
R1	1-216-295-91	SHORT 0	
R2	1-216-295-91	SHORT 0	
**********			
		MISCELLANEOUS	
		**********	
29	1-790-136-11	WIRE (FLAT TYPE) (23 CORE)	
30	1-233-544-22	ENCAPSULATED COMPONENT (US)	
30	1-233-546-22	ENCAPSULATED COMPONENT (JE, HK, SP, MY)	
30	1-693-387-21	TUNER (FM/MW/LW) (AEP, UK)	
33	1-790-135-11	WIRE (FLAT TYPE) (19 CORE)	

Ref. No.	Part No.	Description	Remarks
34	1-790-252-11	WIRE (FLAT TYPE) (17 CORE)	
⚠60	1-558-943-41	CORD, POWER (JE)	
⚠60	1-775-787-91	CORD, POWER (AEP, UK, HK, SP, MY)	
⚠60	1-783-532-41	CORD, POWER (US)	
63	1-500-021-11	CLAMP, SLEEVE FERRITE	
⚠65	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)	
⚠65	1-569-008-21	ADAPTOR, CONVERSION 2P (SP, MY)	
⚠65	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK, HK)	
127	1-790-121-01	WIRE (FLAT TYPE) (21 CORE)	
164	1-667-955-11	PC BOARD, FLEXIBLE	
169	1-782-909-11	WIRE (FLAT TYPE) (13 CORE)	
⚠203	8-583-028-02	OPTICAL PICK-UP BLOCK KMS-260A/J1N	
204	1-664-039-11	PC BOARD, OP TRANSLATION FLEXI	
⚠321	1-418-045-01	ENCODER, ROTARY	
⚠401	8-848-379-31	OPTICAL PICK-UP BLOCK KSM-213BFN/C2NP	
406	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
HR901	1-500-489-14	HEAD, OVER LIGHT	
M102	A-4672-240-A	MOTOR ASSY, SLED	
M681	A-4672-241-A	MOTOR ASSY, SPINDLE	
M701	X-4950-341-1	MOTOR (CLAMP) ASSY	
M702	X-4950-342-1	MOTOR (LOADING) ASSY	
M903	1-698-874-11	MOTOR, DC (LOADING)	
M904	1-698-874-11	MOTOR, DC (UP/DOWN)	
M905	X-4949-160-1	MOTOR (HEAD) ASSY	
S10	1-762-952-11	SWITCH, PUSH (1 KEY)	
S11	1-762-952-11	SWITCH, PUSH (1 KEY)	
⚠T960	1-433-432-11	TRANSFORMER, POWER (AEP, UK)	
⚠T960	1-433-433-11	TRANSFORMER, POWER (JE, HK, SP, MY)	
⚠T960	1-433-434-11	TRANSFORMER, POWER (US)	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3 × 8 TYPE2 N-S	
#2	7-685-872-09	SCREW +BVTT 3 × 8 (S)	
#3	7-685-647-79	SCREW +BVTP 3 × 10 TYPE2 N-S	
#4	7-685-650-79	SCREW +BVTP 3 × 16 TYPE2 IT-3	
#5	7-685-648-79	SCREW +BVTP 3 × 12 TYPE2 N-S	
#6	7-685-233-19	SCREW +KTP 2.6 × 6 TYPE2NON-SLIT	
#7	7-685-103-19	SCREW +P 2 × 5 TYPE2 NON-SLIT	
#8	7-624-102-04	STOP RING 1.5, TYPE -E	
#9	7-685-861-01	SCREW +BVTT 2.6 × 5 (S)	
#10	7-627-553-17	PRECISION SCREW +P 2 × 2 TYPE 3	
#11	7-624-106-04	STOP RING 3.0, TYPE -E	
#12	7-685-853-04	SCREW +BVTT 2 × 6 (S)	
#13	7-685-851-09	SCREW +BVTT 2 × 4 (S)	
#14	7-621-772-10	SCREW +B 2 × 4	
#15	7-627-000-00	SCREW,PRECISION +P1.7 × 2.2TYPE3	
#16	7-627-852-28	+P 1.7 × 3	
#17	7-627-852-08	SCREW,PRECISION +P 1.7 × 2.5	
#18	7-627-552-27	SCREW,PRECISION +P 1.7 × 2	
#19	7-685-533-19	SCREW +BTP 2.6 × 6 TYPE2 N-S	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

9-922-976-11

Sony Corporation
Home A&V Products Company

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HCD-MD555

SONY

SERVICE MANUAL

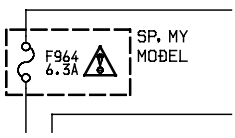
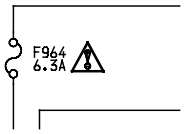
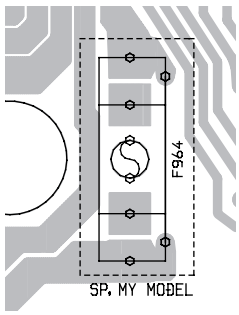
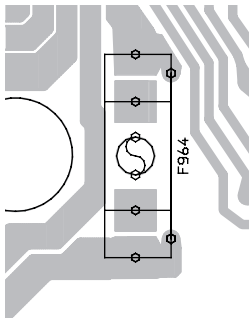
US Model
AEP Model
UK Model
E Model
Tourist Model

CORRECTION-1

Correct your service manual as shown below.

Subject : Correction of Fuse (F964)

(ECN-TA804327)
(ECN-TA804404)

Page	INCORRECT	CORRECT
99	【TRANS BOARD】(TRANS-A/B/C BOARD) location: F-5 	【TRANS BOARD】(TRANS-A/B/C BOARD) location: F-5 
101	【TRANS-B BOARD】 location: D-5 	【TRANS-B BOARD】 location: D-5 
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147	TRANS-B BOARD Ref. No. / Part No. / Description ⚠F964 / ———— / ———————— ⚠F964 / 1-532-506-31 / FUSE TIME LAG 6.3A 250V (SP, MY)	TRANS-B BOARD Part No. / Description 1-532-748-11 / FUSE, GLASS TUBE 6.3A 125V (US) 1-532-506-31 / FUSE TIME LAG 6.3A 250V (EXCEPT US)

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NEW TECHNICAL THEORY
FOR SERVICING

DHC-MD555
CONTROL I & MD WALKMAN LINK
OPERATION MANUAL

MINI Hi-Fi COMPONENT SYSTEM

SONY®

Contents

Section Title Page

1. CONTROL I

1-1. Name 3

1-2. Scope of Application 3

1-3. Compatibility 3

1-4. Basic Concept 3

1-5. Shape of Terminal 4

1-6. Description of Terminals 6
(1) I2C Bus Communication Terminal 6
(2) Power Supply Terminal 6
(3) Power On Terminal 7
(4) Others 7

2. MD WALKMAN LINK

2-1. Outline 8
(1) Function 8
(2) Precautions on Connections 8
(3) Settings of MD Walkman Sound 8
(4) Transmission of Track Name Data 9
(5) Automatic Settings of Track Number 9

2-2. Link Cable 10
(1) Terminal 10
(2) Data Signal 11

1. CONTROL I

1-1. NAME

CONTROL I

1-2. SCOPE OF APPLICATION

The CONTROL I terminal has been adopted from system stereos DHC-MD555, DHC-MD777, and JMD-7. Connecting by the PC connection kit PCLK-PX1 and bi-directional remote commander RM-IA10K (J model only) to the CONTROL I terminal facilitates basic operations of the system stereo, music editing from CD to MD, and title inputs to MDs.

The terminals connecting the optional cassette decks TC-PX100 and TC-SD1 of the above system stereo have different connector shapes, but adopt the same communication format as CONTROL I.

1-3. COMPATIBILITY

CONTROL I has no compatibility with the conventionally used AU BUS in terms of both connector shape and communication format.

CONTROL I also has no compatibility with the CONTROL-A1 adopted for the component stereo in terms of connector shape and communication format.

Although CONTROL I has a similar name with i-LINK using the IEEE1394 terminal which thus may cause them to be confused for one another, these two have no compatibility.

1-4. BASIC CONCEPT

Communication is carried out by the I2C bus between the microprocessors inside the system stereo. In CONTROL I, a special terminal is equipped to enable communication by this I2C bus with the microprocessor of an external equipment, and at the same time, a terminal for turning ON the power of the system stereo from an external equipment has also been added.

1-5. SHAPE OF TERMINAL

The CONTROL I terminal uses a MINI DIN 6-pin connector.

This connector is used for DOS/V PC keyboards and PS/2 mouse, but it has no compatibility with the communication format.

However, taking into account connection to this connector by mistake, power and GND pin positions are made the same to prevent incorrect operations.

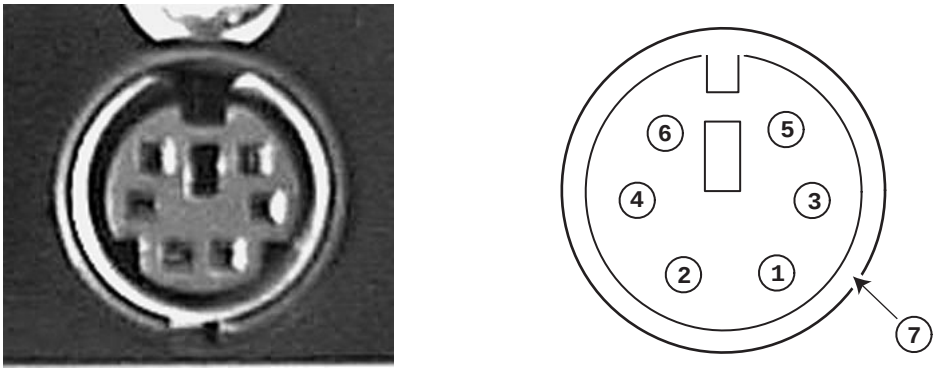

Fig. 1-1. CONTROL I Terminal

Table 1-1. Function of CONTROL I Terminal

No	I/O	Terminal Name	Function
1	I/O	SDA	Serial data input/output terminal
2	–	NC	No Connect (OPEN)
3	–	GND	Grounding terminal
4	–	VDD	+5V terminal
5	I/O	SCL	Serial clock input/output
6	I	POWER ON	Power on signal input terminal
7	–	FRAME GND	Grounding terminal

The terminal for the earlier mentioned optional TC is of the 5-pin type used for system cables, etc. The serial data of the SDA terminal uses the same signal format as CONTROL I.

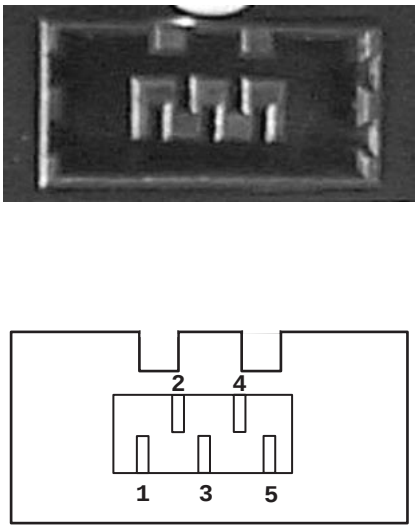

Fig. 1-2. Optional TC Terminal

Table 1-2. Function of Optional TC Terminals

No	I/O	Terminal Name	Function
1	I/O	SDA	Serial data input/output terminal
2	I/O	HELP	Normal:H, when the microprocessor is abnormal:L
3	–	GND	Grounding terminal
4	–	VDD	+5V terminal
5	I/O	SCL	Serial clock input/output

1-6. DESCRIPTION OF TERMINALS

The following describes the terminals of CONTROL I.

(1) I2C Bus Communication Terminal

SDA (I2C serial data):1 pin
SCL (I2C serial clock):5 pin

In the communication between microprocessors inside the current system stereo, the DATA line is expanded to four lines based on the AU BUS, and a 6-line Y BUS with additional CLK and BUSY lines is used as the internal bus. System stereos after DHC-MD555, DHC-MD777, and JMD-7 however adopt the Phillips "I2C format" for the communication format of the internal bus.

The I2C format bus is able to send a higher volume of data than the conventional Y-BUS using two lines serial data (SDA) and serial clocks (SCL) and at high speed. By performing this I2C bus using the system stereo terminal, high speed communication between the system stereo internal microprocessor and microprocessor of external equipments is possible.

The microprocessor incorporated in the CAV-PX1 connection cable of the PC connection kit PCLK-PX1 and microprocessor incorporated in the transmitter receiver of the bi-directional remote control RM-IA10K communicate with the microprocessor of the system stereo via the CONTROL I terminal.

The microprocessor of the optional cassette deck TC-PX100 and TC-SD1 communicates with the system stereo microprocessor via a exclusive connector.

(Reference) Rounding of signal

When the I2C bus inside the system stereo is connected to an external equipment using a connection cable, rounding of waveform occurs from the effects of the stray capacitance of the cable. When the cable is longer and the stray capacitance increases, the rounding of the waveform increases, and may disable communication of the I2C bus.

For this reason, I2C dedicated buffer ICs are used for both the system stereo and external equipment to prevent I2C bus effects even when the cable is connected.

(Important) Operations During Sleep

When the power of the system stereo is in the STAND BY state, all functions are stopped except for some microprocessor functions in order to decrease the power consumption. In this sleep mode, no communication operations by the I2C bus communication terminals SDA and SCL are possible.

In the sleep mode, as the power of the I2C buffer IC is also turned off, the internal I2C bus and buffer ICs are cut off by the MOS-FET switch to prevent incorrect operations by the effects of the external equipment.

(2) Power supply terminal

VDD:4 pin

+5V is supplied from the system stereo only when the system stereo is in the power ON state. No power will be supplied in the STAND BY state.

The I2C buffer IC in the system stereo and I2C buffer IC of the external equipment operate with this power. It prevents from that the communication becomes impossible after one power is turned off.

The connection cable CAV-PX1 of the PCLK-PX1 incorporates the internal I2C buffer IC, 12C-RS232C conversion microprocessor, and RS232C driver IC. These IC powers are all supplied at +5V from the system stereo.

The main power supply of the RM-IA10K transmitter receiver is supplied by the AC adapter. Only the power of the I2C buffer IC is supplied from the system stereo. Although the optional TC also has its own power supply, only the power of the I2C buffer IC is supplied from the system stereo.

When the power of the system stereo is ON, if the power of the above external equipment is OFF, power is supplied from the system stereo to the I2C buffer IC in the external equipment. But, this power is cut by the MOS-FET SW between the I2C buffer IC and the microprocessors of external equipment, and therefore has no effect on the I2C bus of the system stereo.

(Reference) Power supply of CONTROL-A1

The power of the connection CAV-50C of the MDS-PC1 and PCLK-MD1 using the CONTROL-A1 terminal is created from the RS232C signal of the PC and is not supplied from the component stereo.

(3) Power ON terminal

POWER ON:6 pin

Input port for turning on the power of the system stereo from an external equipment when the system stereo is in the STAND BY state. It is connected to the main microprocessor (microprocessor for controlling the power supply)of the system stereo.

The POWER input terminal of the main microprocessor is pulled up to H by the VDD. When the power on signal (L) from an external equipment is input, the unit sets into the power on state.

Excessive noise may be output when the external equipment is turned on, etc. To prevent the power from turning on due to incorrect operations by noises, the following POWER ON signal format is used.

Power on : L (100ms) ⟶ H (100ms) ⟶ L (100ms)

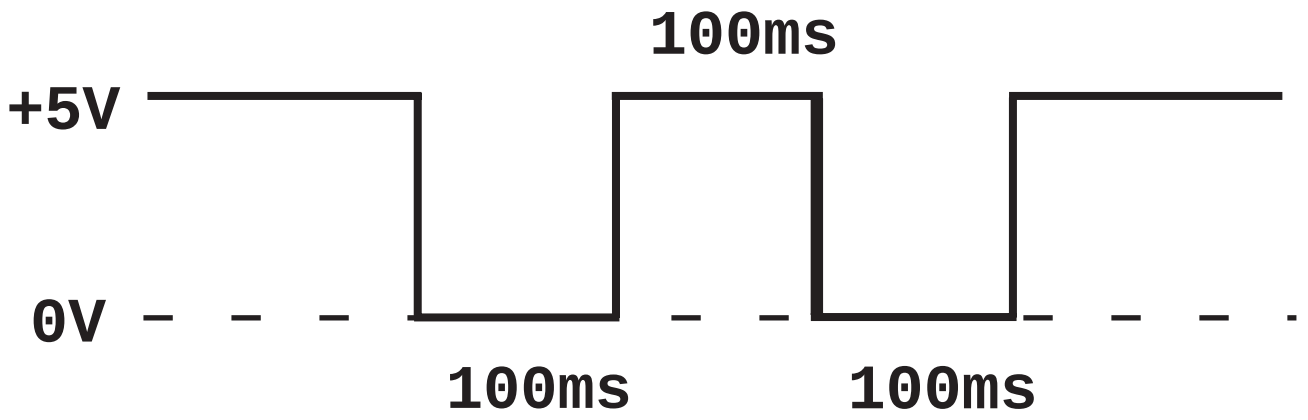

Fig. 1-3. Power ON Signal

(4) Others

NC (OPEN):2 pin

Connected to nothing.

VDD:3 pin

GND terminal where current supplied from the +5V power is returned.

FRAME GND:8 pin

Shield part of the MINIDIN cable. Same as GND.

(Reference) Optional cassette deck signal (2pin:HELP)

Sets to L when data communication errors of the I2C bus are generated and retransmission is requested. Errors are usually not generated.

2. MD WALKMAN LINK

2-1. OUTLINE

(1) Function

The liquid crystal remote controller of the MD Walkman receives the liquid crystal display data output from the MD Walkman and displays the name of the disc played, name of the track played, etc. The MD WALKMAN LINK function uses the audio output and liquid crystal display output to the liquid crystal remote control to perform analog dubbing.

When the MD Walkman and system components such as DHC-MD555 are connected using the link cable (MDLK-PX1) for MD Walkman, analog synchro recording and automatic track number setting can be performed using the headphone signal output from the MD Walkman.

Using the liquid crystal display data output from the MD Walkman, disc names and track names can be edited.

The MD WALKMAN LINK function is a one-directional dubbing function for dubbing from the MD Walkman to the system component.

(2) Precautions on Connections

Connect the side of the MD link cable with the cylindrical ferrite core to the MD Walkman. If the opposite side is connected, errors may occur during data transmission.

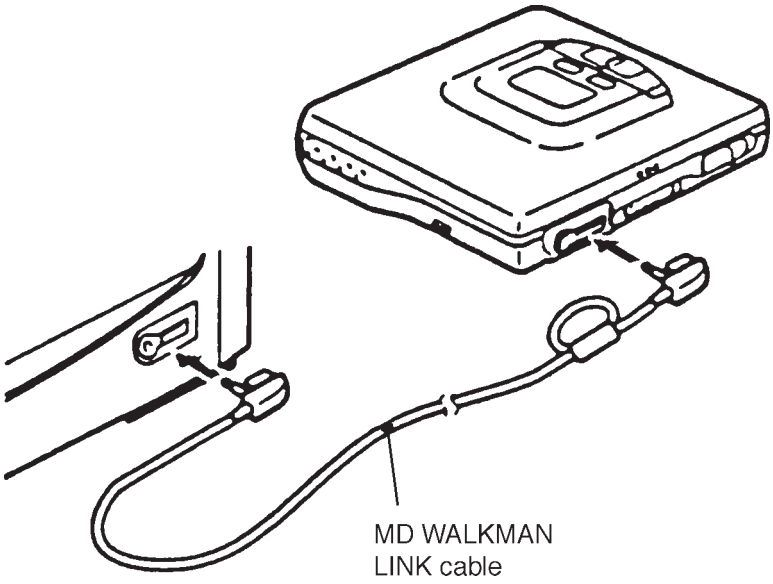

Fig. 2-1. Connecting Method

Settings for the MD Walkman to display the progress time and track number must be performed using the DISPLAY button of the MD Walkman.

(3) Settings of MD Walkman Sound

The MD Walkman link function requires to set the recording level due to the use of the headphone outputs of the MD Walkman for the recording source. If this setting is not performed, the sound may become small or distorted.

After recording, lower the volume of the MD Walkman.

Required settings

- Turn OFF the MEGA BASS (emphasis of bass sounds) switch of the MD Walkman.
- After turning ON the AVLS (volume limit) switch of the MD Walkman, set the volume of the remote control to maximum.
- Set FUNCTION (source) of the system stereo to “MD WALKMAN”.

(4) Transmission of Track Name Data

If the song being recorded has a name, press the NAME EDIT button of DHC-MD555 to edit or copy the name. The track name cannot be recorded automatically for copyright reasons.

***Maximum number of characters transmittable**

Up to 255 bytes (255 ASCII characters) can be transmitted for one track.

2 bytes are used for one Japanese kana character. As other special symbols are also added, the number of characters that can be transmitted is almost halved.

***Time required for data transmission**

Transmission is performed in packets (7 characters). Transmission of one packet takes about 100 ms for the MD player and about 40 ms for the MD recorder.

***Missing data**

If errors occur during transmission and reception due to effects of noise during data transmission, data will be lost in units of packets. In this case, the lost data will not be included in the track name displayed.

For example, in the transmission of the track name 1234567ABCDEFG123, three packet data “1234567”, “ABCDEFG”, and “123” will be sent. Should transmission or reception error at the second packet, the track name will be displayed as “1234567123”.

***Illegal characters in data**

Illegal characters may be displayed rarely and randomly when the portable MD recorder is used. In this case, correct with the editing function.

(5) Automatic setting of track number

Only at the start of recording, detection that the sound data has exceeded a certain level will be performed, after which recording will be started. After this, the track number will be set based on track data output from the MD Walkman. For this reason, the level synchro recording function does not work during recording.

***Incorrect track number setting**

Track numbers may be assigned to positions different from playback when the portable MD recorder is used. In this case, reassign track position by using the editing function.

When the portable MD player for playback is used, track numbers are assigned to the same position as that during playback.

2-2. LINK CABLE

(1) Terminal

The link cable consists of the following terminals. (Refer to Fig. 2-2.)

Table 2-1. Function of Terminals

No	I/O	Terminal Name	Function
1	O	R	Right channel audio terminal.
2	O	L	Left channel audio terminal.
3	–	1/2 VDD	Grounding terminal for remote control. (A. GND)
4	–	GND	Grounding terminal. (D. GND)
5	I	REMOTE	Remote control key detection terminal. When a remote control key is pressed, the voltage corresponding to the key will drop.
6	I/O	DATA	Input/output terminal of the serial data for liquid crystal control.
7	O	R-VCC	Power supply of the liquid crystal remote control. Approx. 3V.

I/O indicates the input/output of the MD Walkman.

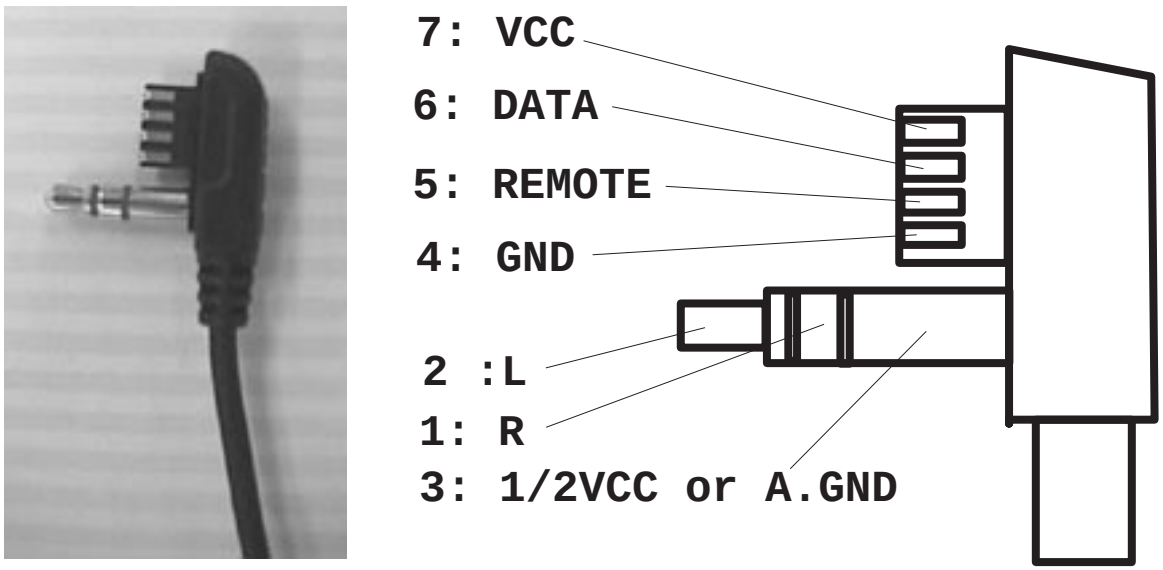

Fig. 2-2. MD Walkman Link Cable Terminal

The link cable terminals consist of the music data terminals and remote control data terminals. The remote control key pressed is detected by the changes in the voltage of the REMOTE terminal. The remote control display data is also transmitted by the serial data of the DATA terminal.

(2) Data signal (DATA:6 pin)

Bi-directional communication is performed between the MD Walkman and system controller of the system stereo.

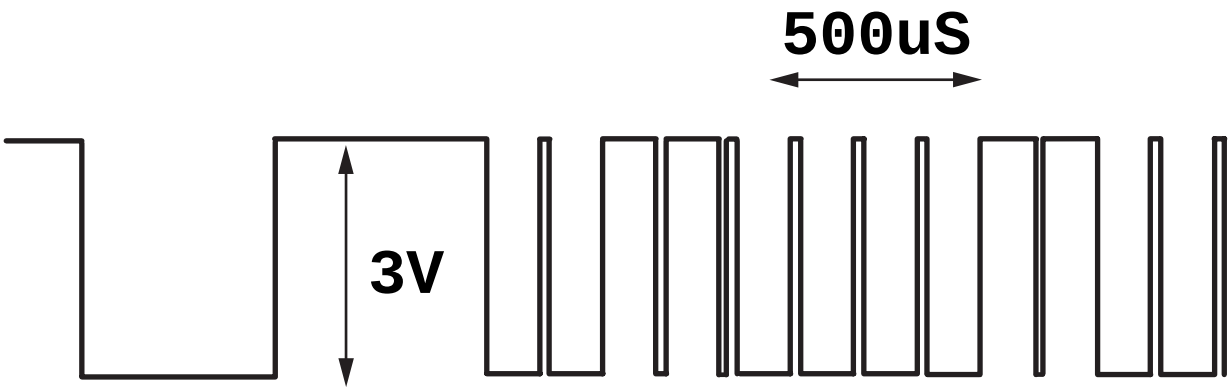

Fig. 2-3. Data Signal

Liquid crystal display data is periodically output from the system controller of the MD Walkman. To copy the track name data, the data transmission request command is output to the DATA terminal from the system controller of the system stereo, and the track name data is transmitted from the system controller of the MD Walkman.

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